

QST

June 1957

50 Cents

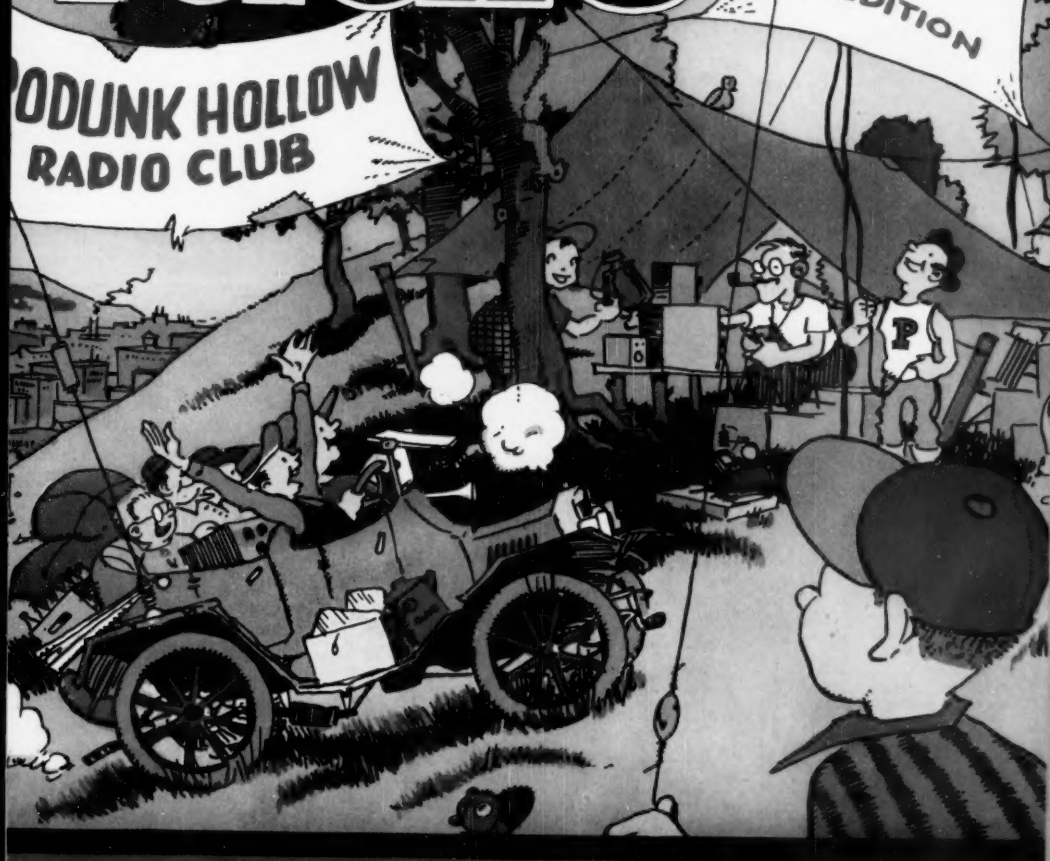
55c in Canada

devoted entirely to

amateur radio

ODUNK HOLLOW
RADIO CLUB

VHF SECTION
F.D.
EXPEDITION



A.R.R.L. FIELD DAY, JUNE 23 - 24

LARGEST PRODUCERS IN THIS FIELD FOR TWO DECADES...

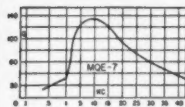
HIGH Q INDUCTORS FOR EVERY APPLICATION

FROM STOCK... ITEMS BELOW AND 650 OTHERS IN OUR CATALOGUE B.

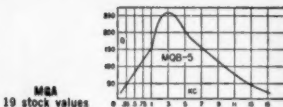


MQ Series Compact Hermetic Toroid Inductors

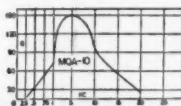
The MQ permalloy dust toroids combine the highest Q in their class with minimum size. Stability is excellent under varying voltage, temperature, frequency and vibration conditions. High permeability case plus uniform winding affords shielding of approximately 80 db.



MQE
15 stock values
from 7 Mhz.
to 2.8 Hy.



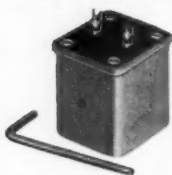
MQB
19 stock values
from 7 Mhz.
to 22 Hy.



MQB
12 stock values
from 10 Mhz.
to 25 Hy.



MQ drum case structure.
Length Width Height
MQE 1/2 1-1/16 1-3/8
MQB 11/16 1-4/16 1-25/32
MQA 1-4/16 2-4/16 2-13/16



VIC case structure
Length Width Height
1-1/4 1-11/32 1-7/16



Type	Mean Hys.	Type	Mean Hys.
VIC-1	.0085	VIC-12	1.3
VIC-2	.013	VIC-13	2.2
VIC-3	.021	VIC-14	3.4
VIC-4	.034	VIC-15	5.4
VIC-5	.053	VIC-16	8.5
VIC-6	.084	VIC-17	13.
VIC-7	.13	VIC-18	21.
VIC-8	.21	VIC-19	33.
VIC-9	.34	VIC-20	52.
VIC-10	.54	VIC-21	83.
VIC-11	.85	VIC-22	130.

VIC Variable Inductors

The VIC Inductors have represented an ideal solution to the problem of tuned audio circuits. A set screw in the side of the case permits adjustment of the inductance from +85% to -45% of the mean value. Setting is positive.

Curves shown indicate effective Q and L with varying frequency and applied AC voltage.

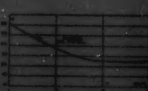
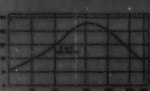


MQL-1 2.5/10 Hys.
MQL-2 5/20 Hys.
MQL-3 50/200 Hys.
MQL-4 500/4000 Hys.

MQL case
1-13/16 dia. X 2-1/2" H.

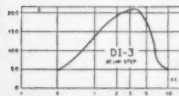
MQL Low Frequency High Q Coils

The MQL series of high Q coils employ special laminated Hipermalloy cores to provide very high Q at low frequencies with exceptional stability for changes of voltage, frequency, and temperature. Two identical windings permit series, parallel, or transformer type connections.

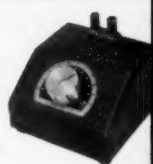


DI Inductance Decades

These decades set new standards of Q, stability, frequency range and convenience. Inductance values laboratory adjusted to better than 1%. Units housed in a compact die cast case with sloping panel ideal for laboratory use.



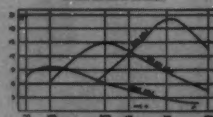
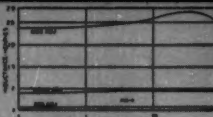
DI-1 Ten 10 Mhz. steps.
DI-2 Ten 100 Mhz. steps.
DI-3 Ten 1 Hys. steps.
DI-4 Ten 10 Hys. steps.



DI DECADE
Length Width Height
4 1/2 4 3/8 2 3/8

HVC Hermetic Variable Inductors

A step forward from our long established VIC series. Hermetically sealed to MIL-T-27... extremely compact... wider inductance range... higher Q... lower and higher frequencies... superior voltage and temperature stability.



Type	Min. Hys.	Mean Hys.	Max. Hys.
HVC-1	.002	.006	.02
HVC-2	.005	.015	.05
HVC-3	.011	.040	.11
HVC-4	.03	.1	.3
HVC-5	.07	.25	.7
HVC-6	.2	.8	2
HVC-7	.5	1.5	5
HVC-8	1.1	4.0	11
HVC-9	3.0	10	30
HVC-10	7.0	25	70
HVC-11	20	60	200
HVC-12	60	100	600



HVC case structure.
Width Length Height
25/32 1-1/8 1-7/8

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specifications
for prices.

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150 VARICK STREET, NEW YORK 13, N. Y.
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The New Ideas in communications are born at hallicrafters

Brilliant performance! The SX-99 receiver features broadcast coverage 540-1680 kc plus three S/W bands, 1680 kc—34 mc. Bandspeed calibrated over 10, 11, 15, 20, 40, 80 meter amateur bands. Antenna trimmer, "S" meter, crystal filter. Seven tubes plus rectifier. Black cabinet, silver trim, piano hinge top. **Model SX-99—\$149.95**

Incomparable value! SX-100 Selectable Sideband Receiver proved best for your money by far in its field. "Tee-Notch" filter provides stable non-regenerative system for rejection of unwanted heterodyne. Notch depth control; antenna trimmer; 100 kc quartz crystal calibrator. Logging dials for both tuning controls. Freq. range: 538-1580 kc; 1720 kc—34 mc. **Model SX-100—\$295.00**

New heavyweight champion! Rugged is the word for the SX-101 receiver—and it's all amateur. Heaviest chassis in the industry. Full gear drive. Complete coverage of 7 bands: 160, 80, 40, 20, 15, 11-10 meters. Special 10 mc. pos. for WWV. Tee-notch filter. S-meter functions with A.V.C. off. Selectable side band. **Model SX-101—\$395.00**



Cleanest signal on the air! Hallicrafters new HT-32 transmitter brings you a new standard of clarity with two exclusive features: (1) 5.0 mc quartz crystal filter—cuts unwanted sideband 50 db. or more; (2) new bridged-tee modulator, temp.-stabilized and compensated network provides carrier suppression in excess of 50 db. SSB, AM or CW output on 80, 40, 20, 15, 11-10 meter bands. High-stability gear-driven V.F.O. 144 watts peak input. Ideal CW keying and break-in operation. **Model HT-32—\$675.00**

New ceramic tubes! Ultra-compact new HT-33 kilowatt amplifier accents performance and dependability with costlier ceramic tubes—another Hallicrafters first. 100 watts greater plate dissipation. Greater overload safety. Unsurpassed ruggedness. **More features:** six amateur bands, 80, 40, 20, 15, 11-10 meters; simplified tuning; low drive requirement; quieter operation from low speed blower. All control leads filtered. **Model HT-33—\$775.00**

Available on convenient terms
from your radio parts distributor

The
hallicrafters
Company
Chicago 24, Ill.

ANOTHER COLLINS FIRST



KWM-1

With These Firsts

in Amateur Mobile Equipment:

FIRST TRANSCEIVER • FIRST SSB • FIRST VOX AND
SPEAKER ANTI-TRIP CIRCUITS • FIRST ALL-
TRANSISTOR POWER SUPPLY • FIRST AUTOMATIC
LOAD CONTROL • FIRST PRECISION TUNED
VARIABLE FREQUENCY OSCILLATOR • FIRST TO USE
MECHANICAL FILTER • FIRST CRYSTAL-
CONTROLLED BFO AND RECEIVER HF OSCILLATOR.

These are *important* firsts in Amateur mobile communication, and all designed into one compact unit — the 175 watt* 14-30 mc KWM-1. This compactness and the low cost of the KWM-1 are a result of using common components for both transmit and receive, which also results in exact coincidence of signals in frequency-determining elements. Other top features include frequency stability comparable to the KWS-1/75A-4 combination; break-in CW using VOX circuits; side tone for monitoring CW. An optional adaptor will be available to

*RF PEP Input

separate transmit and receive frequencies for working out-of-band DX. Only 6¼" H, 14" W, 10" D. Weighs 15 pounds.

Your Collins distributor has full details on the KWM-1, which will be available from production in August. Contact him today.

KWM-1 Transceiver	\$770.00
516E-1 12 vdc Power Supply	248.00
516F-1 115 vac Power Supply	103.00
312B-2 Speaker Console with directional wattmeter	146.00
312B-1 Speaker in cabinet	25.00
351D-1 Mobile Mounting Tray	TBA

Collins CREATIVE LEADER IN COMMUNICATION



QST

JUNE 1957

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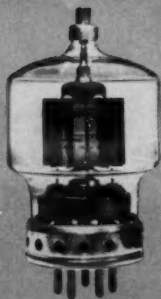
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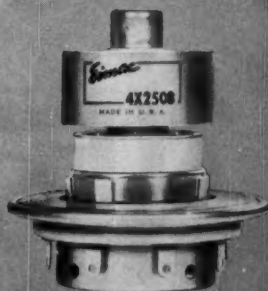
4-65A



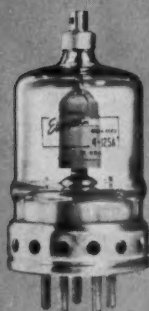
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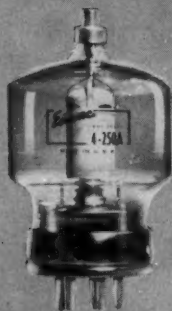
4E27A



4X250B and
air system socket



4-125A



4-250A



4CX300A

CW

SSB

AM

Eimac First...for all band transmission

4-65A Radial-Beam Power Tetrode

Smallest of the Eimac internal anode tetrodes, the 4-65A has a plate dissipation rating of 65 watts and is ideal for deluxe mobile as well as fixed-station service.

	CW	AM	SSB
Plate Voltage	3000v	2500v	3000v
Driving Power	1.7w	2.6w	0
Power Input	345w	275w	195w

4-400A Radial-Beam Power Tetrode

Highest powered of the Eimac Big Six, it will easily deliver a kilowatt per tube in CW, AM or SSB application. Forced-air cooling is required.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	6.1w	3.5w	0
Power Input	1050w	825w	900w

4E27A Radial-Beam Power Pentode

The 4E27A gives outstanding performance in all types of operation. When suppressor-grid modulated, it will deliver 75 watts at carrier conditions.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	2.3w	2.0w	0
Power Input	460w	380w	345w

4X250B Radial-Beam Power Tetrode

A compact, rugged tube unilaterally interchangeable in nearly all cases with the famous 4X150A, with the advantages of higher power and easier cooling.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0
Power Input	500w	300w	500w

4-125A Radial-Beam Power Tetrode

The versatile tube that made screen grid transmitting tubes popular. This favorite for commercial, military and amateur use is radiation cooled.

	CW	AM	SSB
Plate Voltage	2500v	2500v	3000v
Driving Power	3.8w	3.3w	0
Power Input	500w	380w	315w

4-250A Radial-Beam Power Tetrode

A high power output tube with low driving requirements. A pair of Eimac 4-250A's easily handle a kilowatt input in AM, CW or SSB service.

	CW	AM	SSB
Plate Voltage	3000v	3000v	3000v
Driving Power	2.6w	3.2w	0
Power Input	1035w	675w	630w

4CX300A Ceramic Power Tetrode

A new all ceramic-metal high power tetrode designed for rugged service. Will withstand heavy shock and vibration and operate with envelope temperatures to 250° centigrade.

	CW	AM	SSB
Plate Voltage	2000v	1500v	2000v
Driving Power	2.8w	2.1w	0w
Power Input	500w	300w	500w

Information on Eimac tubes and their applications is available free upon request from our Amateur Service Bureau. Write today for copies of our Quick Reference Catalogue, Application Bulletin No. 8 "Power Tetrodes," Application Bulletin No. 9 "Single Sideband," and other valuable literature.

EITEL-McCULLOUGH, INC.
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The World's Largest Manufacturer of Transmitting Tubes



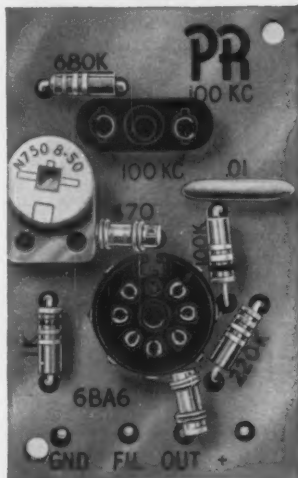
PR *Printed Oscillator Kit... has Many Uses!*

- As 100 Kc. Marker
- As 1000 Kc. Marker for Check Points up to 54 Mc.
- As Foundation Circuit for low Frequency SSB Crystals

Yes—the new PR 100 Kc. Printed Oscillator Kit is already doing additional jobs . . . and well! For instance, by using a PR 1000 Kc. crystal it will give useful check points up to 54 Mc. on receivers where high frequency dial calibrations are not accurate enough for 100 Kc. determinations. Also—it's proving very useful for low frequency SSB crystals. Where a number of circuits are incorporated, this kit may be used.

Assemble in MINUTES. Kit contains everything but 6BA6 oscillator tube and crystal. Circuit guaranteed only when used with a PR crystal. See your dealer.


Amateur Net, \$4.50



Actual size illustration.

PR

Crystals



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Section Communications Managers of the ARRL Communications Department

Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in QST. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. *All amateurs in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form T).*

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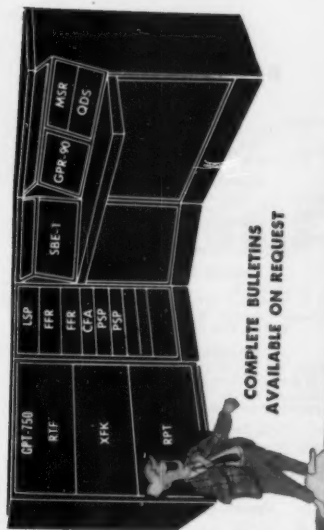
* Official appointed to act temporarily in the absence of a regular official.



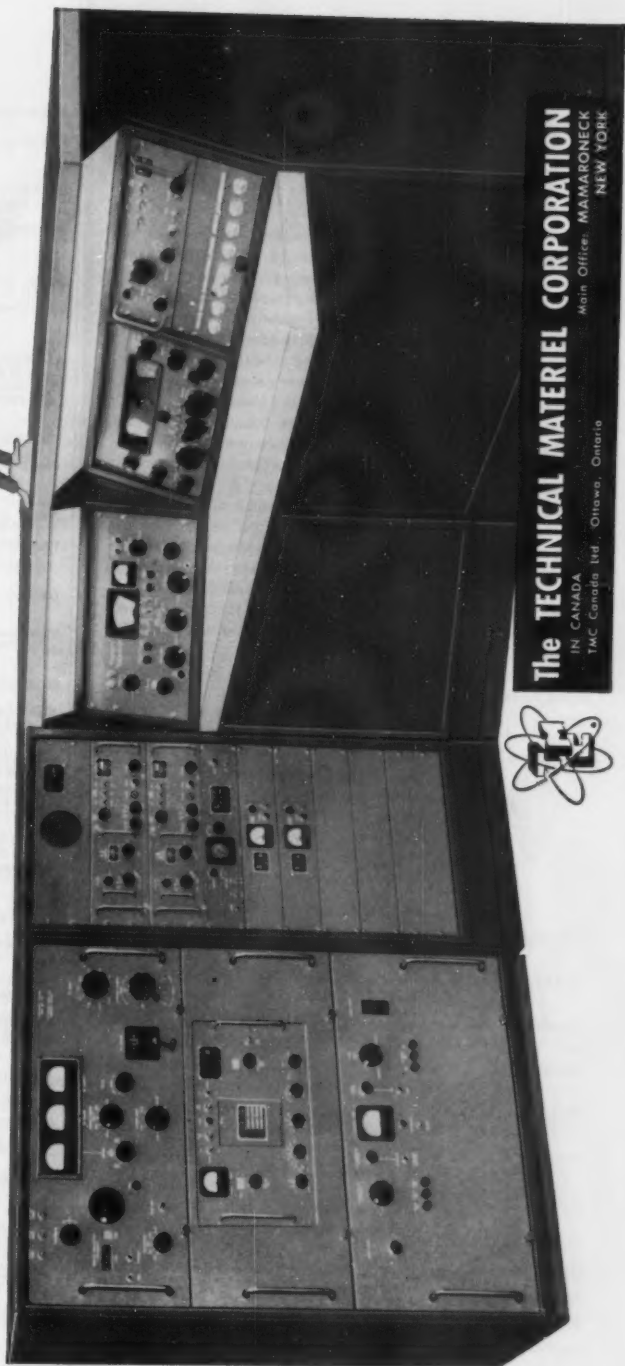
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THE AMERICAN RADIO RELAY LEAGUE, INC.,

is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, and for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

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"It Seems to Us..."



THIRD-PARTY TRAFFIC

The May issue of our esteemed contemporary *CQ* contains a "correction" by the editor of a January item he wrote which indicated third-party traffic was taboo internationally unless some special treaty was in effect between the United States and the country concerned; that is, the January piece indicated such traffic was taboo, and now the May issue says it ain't necessarily so.

The editor was right in January; the May item is wrong.

Before some amateurs get cited by FCC for handling, or attempting to handle, third-party traffic internationally, let us make the situation perfectly clear. *You can't do it*, except in those cases where we have specific treaty arrangements permitting it. These special cases involve Canada, Chile, Cuba, Costa Rica, Ecuador, Liberia, Nicaragua and Panama. With these countries personal third-party traffic (of a nature that would not normally be handled by commercial communications facilities) may be handled freely, in either direction. With other countries, absolutely no, even if "unimportant."

The League has been through this matter many times, over the years. It is important for U. S. amateurs to realize that, for the most part, other countries of the world simply do not want their amateurs handling messages for, between or on behalf of third parties, *even within the boundaries of their own countries*. Admittedly, when the first international conference was held, in Washington (1927), it didn't say anything prohibiting international handling of amateur third-party traffic. It just didn't occur to most other nations to say anything about it, since they didn't permit it domestically. But in 1932, at the Madrid conference following up Washington, somebody got hold of an ARRL message blank and noticed it said something about handling messages anywhere in the world, and all Hades broke loose. We'll never forget the uproar. *Amateurs handling messages!* They wanted none of it and at Madrid they wrote in what was intended to make it clear it wouldn't be permitted, internationally. That

language, repeated at the Cairo Conference of 1937; read: "*It shall be strictly forbidden for owners of amateur stations to transmit international communications emanating from third persons.*"

But some U. S. amateurs adopted various subterfuges to handle international third-party traffic anyway — things such as asking the amateur at the other end to convey an informal "message" to somebody in the foreign amateur's town, or getting the non-amateur (or amateur) friend at the station at this end.

Well, this had the inevitable result: at the next conference, at Atlantic City, in 1947, these practices having come to the attention of various foreign administrations, they changed the old Madrid language to plug the loophole (if any). The text, adopted then and now binding upon United States and all other amateurs, reads as follows: "*It is absolutely forbidden for amateur stations to be used for transmitting international communications on behalf of third parties.*" It's all there in big print. And we assure you that if this language doesn't work it will be changed next time, after some hard and critical looks at what some amateurs are doing, or trying to do, which won't do the rest of us any good. (The "some" will probably have received citations from FCC anyway.)

You may wonder why, if there is such a flat prohibition of international third-party traffic or message handling, we do have it permitted with the countries enumerated earlier. That comes about from a paragraph immediately following the prohibitive text. "The preceding provisions may be modified by special arrangements between the countries concerned." It is under this provision we have been able to effect special message-handling treaties with the countries listed.

Let us have no more "lawyerizing" about what the international regulations mean. They mean we don't handle any communications, traffic, messages, memoranda or whatever to, from or on behalf of third parties — and that goes even if the third party is another amateur.

(Continued on next page)

Internationally, amateurs working each other are supposed to confine their remarks to themselves.

Period.

27 Mc.

The Federal Communications Commission has issued a notice of proposed rule-making which, among other things, would withdraw permission of amateurs to use the ISM (industrial, scientific and medical) "11-meter" band, 29.96-27.23 Mc.

The amateur aspect is only part of an involved series of changes FCC is proposing for a number of radio users, mostly in the growing safety and special services category. At present, the Citizens Radio Service operates in 460-470 Mc., but it is now proposed to take away from that service all but 500 kc. of this band and re-assign it to other services such as industrial and domestic public. Searching for another location in the spectrum for use by the Citizens licensees it would evict from 460-470, the Commission believes 26.96-27.23 would be a suitable spot. FCC points out that inasmuch as a large portion of the Citizens operation is remote control by radio, it would be logical to locate most of that activity near the Citizens "control" frequency at 27.255 Mc. FCC supports its proposal to delete amateurs from the band with the argument that amateur activity in this portion of the spectrum is almost exclusively in the adjacent 28-Mc. band; and anyway, it points out, any amateur wishing to continue "control" use of the 26.96-27.23 channels may do so by obtaining a Citizens license.

Admitting that FCC is faced with serious and numerous allocations problems, and without going at this time into some of the technical aspects involved in putting a low-powered Citizens service into a growing ISM band, we think somebody overlooked a more basic question: the Commission's proposal is counter to an international treaty to which we are a party (Atlantic City, 1947). In that treaty, the allocation table indicates that the band 26100-27500 kc. is allocated on a world-wide basis to the fixed and mobile services (except aeronautical mobile). Then there's a footnote which says that a band at 27120 kc. is designated for ISM (with a tolerance figure of 0.6%) and then there's another footnote which says that in the ISM band 26960-27230 kc. in Region 2 (that's the Americas), Australia, New Zealand, the Union of South Africa and the territory under mandate of Southwest Africa, the amateur service will operate.

We know all about how this rather involved-sounding business happened; we were in on it from its beginnings in the United States just before Atlantic City. It started when, at the last minute, the ISM people suddenly came in with a lot of requested requirements for space in the spectrum. No provision for such a service had been made: what to do? Rather than tear the U. S. proposed table apart, and in view of the unknown future requirements of ISM, it was

decided to spot some ISM frequencies in the table, in the "fixed and mobile" assignments. It was generally supposed that when ISM got going on these frequencies they'd pretty well ruin them for fixed and mobile, and in fact the first footnote indicates that on the ISM frequencies (and tolerance limits) anybody else trying to work would simply have to take it. But it sounded pretty grim as a prospect. So we decided maybe amateurs could get some use out of the ISM band, interference or no interference, and we got ourselves written in. Eventually, this got carried into the international document in the additional footnote we've referred to.

No country has to assign its amateurs anything just because the international table says something is "amateur," anymore than it has to assign other services which may be listed. (For instance, the international table lists 3500-4000 kc. as "Amateur, Fixed and Mobile" but FCC assigns it only to amateur.) So FCC isn't necessarily obliged to assign 26960-27230 to amateurs in this country, because of that footnote; on the other hand, if it doesn't we don't see how it can assign anybody else!

A nice technical point to enliven the discussion, and not the complete story we'll have for the rule-making procedure (the Board will discuss our whole filing at its meeting in May) but to us it looks as if the contemplated FCC action is out of order, under the existing Atlantic City treaty.

In the meantime, the text of the Commission's proposal is in "Happenings" in this issue. We suggest you read it. We think the Commission is wrong in its view that very little use is made of the band. Short of v.h.f., it is the only band where A0 (duplex), A2 (tone-modulated telegraphy) and A4 (facsimile) emissions are permitted. It is a band that is often open when 28 Mc. is not, at least not the voice segment. Assuredly, there is much more activity on 28 Mc. — it is a band many times larger. However, in proportion to its size, and considering the occasions when the band is useless because of diathermy or other interference, we think the 27 Mc. band is by no means an orphan in the amateur family.

By the time you read this the Board of Directors of the League will have met, examined the FCC proposal, determined ARRL policy toward it, and directed the filing of appropriate comment. We suggest that if individual amateurs and club groups have comments with respect to the Commission's points as regards the reasons for deleting the amateur service, they be forwarded direct to FCC in time to meet the June 10th deadline.

Strays

Ed Shepherd, of Swampscott, Mass., has an appropriate call — KN1BAH.

"Autosync" Frequency Control

Simultaneous Tuning of Transmitter and Receiver for Spot-Frequency Operation

BY R. J. MOSER,* W8OPB

THE TREND in modern transmitter design seems to be to parallel closely the design practices used in communications receivers. A kilowatt transmitter not only looks like a receiver, it uses similar tubes and circuits. Several factors have dictated this somewhat different approach to transmitter construction, among them TVI and s.s.b.

Two specific functions that have common grounds of design and application to transmitting and receiving equipment are those of frequency control and frequency selectivity. The requirements as to frequency stability are equally exacting in either application and much stress has been placed upon this aspect of transmitter and receiver design. As to selectivity, it will be noted that identical filters are being used in receivers and transmitters, where single side band is employed.

Undoubtedly, it has occurred to many hams that it should be possible to integrate these functions in the transmitter and receiver by allowing one oscillator to control the frequency of transmission and reception and to use one filter in providing the necessary frequency selectivity in both applications. It was with this idea in mind that the unit described here was worked out.

* Pine Drive, Dalton, Ohio.

• No need to worry about "zeroing" the other station in a single-side-band contact when the frequency control system described here is in use. Utilizing the same oscillators for both transmitting and receiving, the transmitting frequency is automatically the same as that to which the receiver is set. The same mechanical filter is used for s.s.b. selection in both cases, too.

In this unit a Collins mechanical filter is used as an i.f. filter in a modified Super Pro receiver and is also used, when transmitting, as a side-band filter for s.s.b. Further, the stabilized h.f. oscillator of the receiver is used, after being mixed with the b.f.o. signal from the receiver, to control the frequency of the transmitter — always keeping it on the frequency to which the receiver is tuned (except on c.w., as will be explained later).

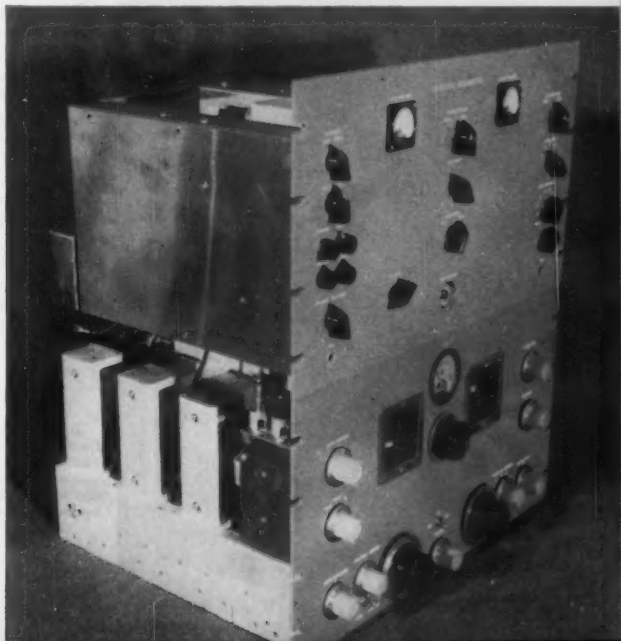
The advantages of this "Autosync" principle should be readily apparent, particularly to s.s.b. operators. When s.s.b. is being used, especially in round-tables, it becomes a practical necessity that all stations operate on exactly the same frequency. Those who have attempted to follow a rapid-fire voice-control conversation between two or more s.s.b. operators will readily agree

»

Transmitter and receiver are coordinated units at W8OPB. The modified Super Pro receiver supplies the frequency control for both receiver and transmitter, automatically placing the two on the same operating frequency.

»

June 1957



that it is difficult to get solid copy when constant retuning is required. Those interested in c.w. work, DXers particularly, also should find the "Autosync" feature helpful.¹

It is inherent in the system described that on c.w. the transmitted signal is not on the exact frequency of the received signal but is removed from it by an amount equal to the c.w. beat-note frequency. This offset feature should actually prove an advantage for DXers (except when working on the extreme band edges) since it precludes the possibility of operating at zero beat with that elusive DX station.

How It Works

The mechanical filter used has a pass band of approximately 3.1 kc., centered on 455 kc. The h.f. oscillator in the receiver operates on the high side of the incoming signal. Thus, when receiving an s.s.b. signal on a suppressed-carrier frequency of 3900 kc. and transmitting the lower side band, the receiver h.f. oscillator must be set to a frequency which, when combined with 3900 kc. in the mixer, will produce a difference frequency equal to the b.f.o., or carrier-reinsertion, frequency. If the b.f.o. frequency is 453.3 kc. (approximately 20 db. down on the low-side slope of the mechanical filter response curve) the receiver h.f. oscillator must be on $3900 + 453.3$ kc., or 4353.3 kc. Since the lower side band is being used, it will occupy the spectrum 3897-3900 kc., assuming the highest modulating frequency to be 3000 cycles. This side band, when mixed with the h.f. oscillator on 4353.3 kc., is converted to the range 453.3-456.3 kc. and is passed by the filter to the following i.f. stages of the receiver.

¹ LaRue, "A Contest Man's Receiver-Tracking V.F.O. for 7 Mc.," QST, May, 1956.

If the upper side band had been transmitted using the same suppressed-carrier frequency, a different b.f.o. frequency would be required in order to allow the upper side band to fall within the pass band of the mechanical filter. In this case we would use a b.f.o. frequency of 456.7 kc., which is 20 db. down on the high-side slope of the filter. Therefore, to receive the upper side band the h.f. oscillator would operate on $3900 + 456.7$ kc., or 4356.7 kc.

To transmit an s.s.b. signal on the same frequency and use the same side band as is being received, we simply apply the two local-oscillator (h.f. and b.f.o.) frequencies to a mixer and retrieve the difference frequency. In the case of the 3900-kc. lower side band example, we will be using 4353.3 kc. — 453.3 kc. or 3900 kc. as the carrier frequency. By the same token, the upper side band will be transmitted when we take the difference between 4356.7 kc. and 456.7 kc., or 3900 kc. The same results obtain when receiving a double-side-band a.m. signal, except that in this case we will actually be copying only one of the transmitted side bands (the choice is ours) and will be transmitting carrier plus the side band of our choice.

C.W. Operation

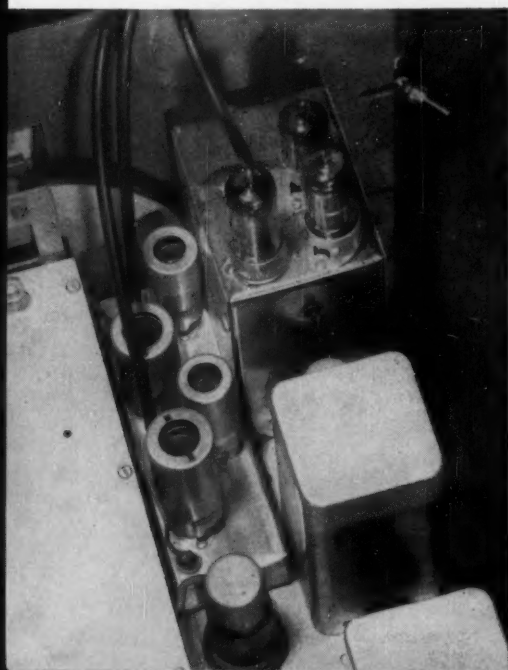
For c.w. operation the situation is slightly altered. Here we no longer wish to convert the incoming signal to the same frequency as the b.f.o., since doing so would produce no audible output from the detector. We need, instead, to convert the received signal to a frequency which differs from the b.f.o. frequency by a matter of 1000 cycles or so. Obviously, there is a choice of b.f.o. frequencies, either of which will produce the desired beat note, the choice being made on the basis of interference conditions or operator preference as to direction of tuning the band (low to high or high to low). If the 453.3-kc. b.f.o. frequency is used the receiver h.f. oscillator must be set to a frequency which, when combined with the 3900-kc. c.w. signal, will produce a 1000-cycle note at the output of the detector. For the converted c.w. signal to pass through the mechanical filter, the h.f. oscillator must be set to produce an i.f. frequency of 454.3 kc., giving the desired 1000-cycle beat with the 453.3-kc. b.f.o. Thus the h.f. oscillator will be operating on $3900 + 454.3$ kc., or 4354.3 kc.

When the procedure is reversed for transmitting, the transmitter frequency will be the difference between 4354.3 kc. and 453.3 kc., or 3901 kc. — just 1000 cycles higher in frequency than the received signal. Had we chosen to use the other b.f.o. frequency, 456.7 kc., the

«

Receiver modifications for the "Autosync" are confined to one corner of the Super Pro at W8OPB. A new oscillator-mixer chassis occupies the space where the original h.f. oscillator and mixer tubes were, and a box containing the mechanical filter, i.f. buffer, and VR tubes replaces the crystal filter assembly.

QST for



transmitter would be operating on 3899 kc., 1000 cycles lower than the received signal.

The foregoing example is based on single conversion in the receiver. With receivers using double conversion an equivalent end result may be obtained with the slight added complexity of an additional mixing process.²

Circuit Description

The block diagram, Fig. 1, and the circuit diagrams show the essential details of the unit whose operation has been discussed. In practice, isolating buffer stages at the input and output of the filter were found necessary in order to eliminate unwanted feedback through the system. These isolating stages are bias controlled so as to act as "gates" which steer the signals to the proper paths for receiving or transmitting. It was also necessary to isolate the receiver h.f. oscillator from the transmitter portion of the unit to minimize the effect of transmit-receive switching on the oscillator frequency. Considerable time was spent in trying all types of mixers in the receiver in the search for one which could be blocked, while transmitting, without causing perceptible change of the h.f. oscillator frequency. Even those having exceptional freedom from pulling were unsatisfactory when it was attempted to cut them off com-

² Also, with receivers of either the single- or double-conversion type, it is possible to produce a resultant output frequency which does not have the feature of being automatically the same as that to which the receiver is tuned but is in some other part of the frequency spectrum. An obvious application would be to extract a control signal in the 5-Mc. region where it could be used to replace the v.f.o. commonly used with excitors that generate a crystal-controlled s.s.b. signal on 9 Mc.

³ Berry, "The Series Balanced Modulator," QST, Sept., 1952.

pletely. It was finally found necessary to allow the mixer to operate continuously and to apply cut-off bias to a succeeding buffer stage in order to eliminate the slight frequency shift.

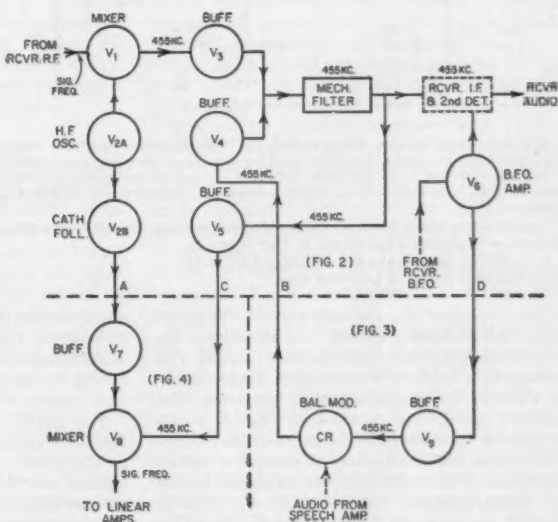
B.f.o. voltage is taken from the plate of the b.f.o. amplifier in the receiver through the isolating 6BH6 stage, V_6 (Fig. 3), which in turn provides driving voltage for the series balanced modulator,³ consisting of two 1N63 germanium diodes. R_1 , the modulator carrier-balance control, is shunted by a panel control, R_2 , which allows carrier reinsertion when a.m. or c.w. operation is desired.

The output of the balanced modulator is fed via a short length of coax cable to the receiver chassis, Fig. 2, where it is applied to the 6BH6 isolator, V_4 , at the input of the mechanical filter. V_4 is cut off when the receiver is activated by the transmit-receive control relay shown at the lower left in the diagram. The 5K loading resistor across the secondary of T_2 is used to reduce the signal level at the filter to the least amount necessary for driving the grids of the 12AT7 mixer, V_8 (Fig. 4).

The filter output signal is passed through the 6BH6 isolator, V_5 , before being applied to the grids of the balanced mixer stage. This isolator, when biased to cutoff by the action of the control relay, prevents received signals at the filter output from being passed to the 12AT7 mixer, V_8 , where even a small amount of unwanted mixing while receiving could cause feedback to the receiver input circuit.

The receiver h.f. oscillator voltage is taken off the cathode of the 12AU7 oscillator tube, V_{2A} , through the cathode follower/isolator, V_{2B} , and fed to the 6AH6 amplifier, V_7 , on the transmitter r.f. chassis (Fig. 4). Since the voltage appearing

Fig. 1—Block diagram of the frequency control and single-side-band generating system. Actual circuits of the sections portioned off by the dashed lines will be found in the correspondingly-numbered figures.



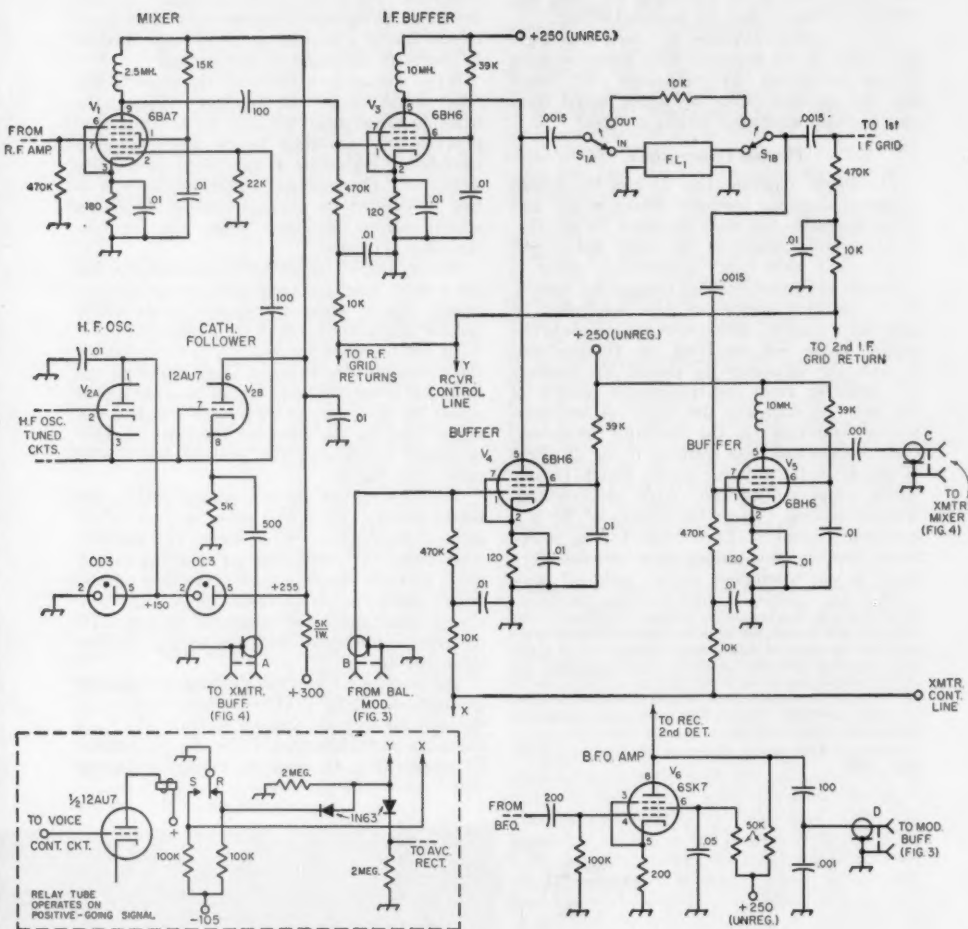


Fig. 2 — These circuits, which include the high-frequency oscillator common to both the receiver and transmitter together with the mechanical filter used for side-band selection, are installed in the Super Pro receiver at W8OPB. Section enclosed in dashed lines indicates method of incorporating send-receive relay in the system. The relay tube may be either voice or manually controlled. This circuit is included in the audio chassis in W8OPB's transmitter.

Capacitances below 0.001 μ f. are in μ f. Resistors are $\frac{1}{2}$ -watt composition. Letter designations on terminals correspond with similar designations in Figs. 3 and 4.

FL1 — 455-ke. mechanical filter (Collins F45D-31).

S1 — 2-section rotary, 2 positions used.

at the cathode of the oscillator tube is only a few volts and is further greatly attenuated by the cathode follower, it is necessary to amplify this voltage to a level sufficient to give linear mixing in V_3 with the output signal of the filter. The 6AH6 is operated as an untuned Class A amplifier on all bands except the highest, 20 meters. Here it was found necessary to provide a higher-impedance plate load than was furnished by the r.f. choke normally used. L_1 and C_1 (Fig. 4) broadly resonate the plate circuit of the 6AH6

on 20 meters, thereby providing sufficient voltage to keep the 12AT7 mixer happy. Different cathode resistors are switched into the 6AH6 circuit by S_{2B} to adjust its output to the same value on each band.

The 12AT7 mixer stage, V_3 , is of the balanced type and nulling of the oscillator input voltage in the plate circuit is aided by the dynamic balance control, R_4 , in its cathode circuit. Since the oscillator signal frequency is only 455 ke. from the desired output frequency, it is necessary

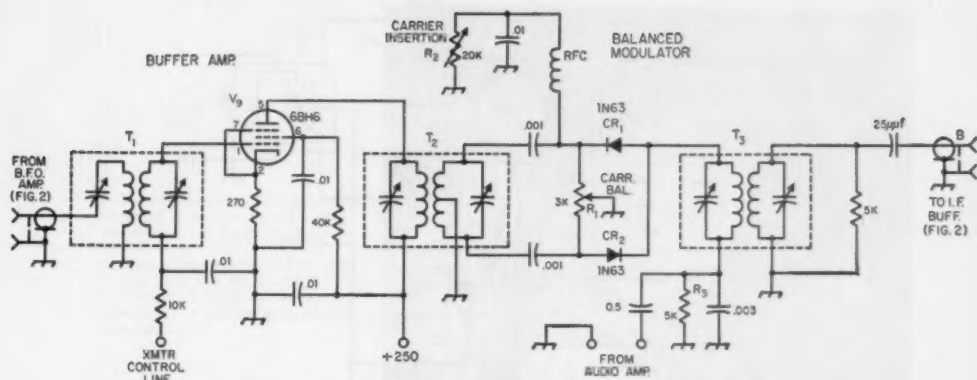


Fig. 3—Balanced modulator circuit. In W8OPB's installation this circuit is included on an audio chassis which also contains voice-control equipment.

Capacitances are in μ f. except as indicated. Fixed resistors are $\frac{1}{2}$ -watt composition; variable resistors are composition volume controls.

T₁—455-kc. midget interstage i.f. transformer (Miller 112C2), primary circuit modified as shown.

T₂—455-kc. midget full-wave diode i.f. transformer (Miller 112C3).

T₃—455-kc. midget interstage i.f. transformer (Miller 112C2).

RFC—10 mh.

to attenuate it as much as possible before reaching the subsequent amplifier stages. The plate coils for the mixer stage (in *I*₁) are bifilar wound over the grid coils for the following amplifier stage, a 6AK6, in the transmitter. This method of coil winding allows a balanced plate circuit without the need for an additional tuning capacitor. The two windings are tightly coupled and the tuning of the secondary serves to tune the primary as well.

Provision has been made for the possible future addition of a remote-tuned v.f.o. which could be used in lieu of the receiver oscillator signal for mixing with the filter output. The panel control, *S*₃, would switch from one source of oscillator signal to the other and a socket has been provided on the r.f. chassis to accommodate the tube required for this possible modification. It would also be possible to provide for crystal-controlled injection if this were considered desirable.

Construction

The relevant modifications of the receiver are shown in one of the photographs. The small sub-chassis mounted in the position formerly occupied by the receiver mixer and oscillator tubes contains the new receiver mixer and oscillator tubes, plus the circuitry for isolating the filter input. The leads which formerly terminated on tube grid caps now go through feed-through insulators to their respective grids. Oscillator output voltage from the cathode follower to the transmitter is via a short length of coaxial cable. The input signal to the filter from the transmitter is likewise through coax cable.

The mechanical filter is contained in the small box which replaces the former crystal-filter assembly of the receiver. The filter by-pass switch, *S*₁, and the switch which manually disables the receiver are also in this box. Mounted on top of

the box are the voltage regulator tubes and the transmitter output isolator tube, *V*₅. Another short length of coax cable is utilized here in feeding the filter output to the transmitter chassis.

Adjustment and Operation

The r.f. input to the 6BH6 b.f.o. isolator, *V*₉, is adjusted by means of the capacitive divider in the plate circuit of the 6SK7 b.f.o. amplifier, *V*₆, so that approximately 8 volts r.m.s. is developed across the carrier balance control, *R*₁. This voltage should be obtained when the input voltage is well below the grid current point of the 6BH6. The audio input to the 1N63 balanced modulator should not exceed 0.15 volt, as measured across *R*₃, on voice peaks. The 5K fixed resistor across the modulator output coaxial cable (Fig. 3) is chosen so as to set the maximum level at the grids of the 12AT7 balanced mixer at 0.8 volt r.m.s. at the above speech level.

The voltage available at the cathode of the receiver h.f. oscillator, *V*_{2A} (Fig. 2), varies from 6 to 15 volts r.m.s., depending on the band in use. Cathode bias on the cathode follower, *V*_{2B}, is made sufficiently high to prevent grid current flow with the maximum oscillator voltage applied to the grid. No loading of the oscillator tube should be permitted. The voltage output at the cathode of *V*_{2B} will vary from 1 to 6 volts, depending on frequency.

The cathode bias resistors for the 6AH6, *V*₇ (Fig. 4), are chosen for each band so that the r.f. voltage at the cathodes of the 12AT7 mixer, *V*₈, is 4 volts r.m.s. This voltage will vary slightly over each band but its value is not highly critical. On the 20-meter band the minimum allowable resistance is used in the 6AH6 cathode, and the plate circuit is adjusted by means of the trimmer capacitor, *C*₁, so that proper voltage is available at the 12AT7 cathodes.

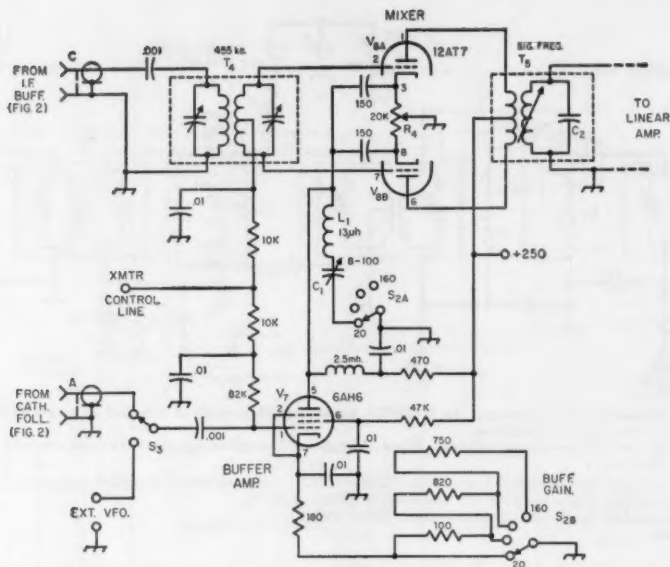


Fig. 4 — Transmitter mixer circuit. This circuit is included on the transmitter chassis in W8OPB's setup. Band-switching details following the 12AT7 mixer plates are not shown.

Capacitances below 0.001 μ f. are in μ f. Fixed resistors are $\frac{1}{2}$ -watt composition.

C₁ — 8-100- μ f. mica trimmer.

S₂ — Rotary switch, 2 poles, 4 positions.

S₃ — Rotary switch, 1 pole, 2 positions.

T₄ — 455-ke. midget full-wave diode i.f. transformer (Miller 112C3).

T₅ — Signal-frequency transformer, home-wound on slug-tuned forms (TV replacement type, $\frac{1}{4}$ -inch diam. form).

Band	Primary *	Secondary	C ₂
14 Mc.	6 turns No. 20	4 μ h.	None
7 Mc.	8 turns No. 24	6 μ h.	56 μ f. mica
3.5 Mc.	20 turns No. 30	14 μ h.	91 μ f. mica
1.8 Mc.	50 turns No. 30	24 μ h.	270 μ f. mica

* Double (bifilar) winding of enameled wire each having the number of turns specified. Center tap formed by connecting finishing ending of one winding to starting end of other.

The balance control, R₄, in the 12AT7 mixer stage should be adjusted with the aid of an r.f. probe and v.t.v.m. connected across the secondary of T₅. Tune the transmitter to about the center of the 20-meter band and adjust T₅ for maximum voltmeter reading. Then, without changing the tuning of T₅, move the receiver tuning to a frequency 455 ke. lower, until evidence of the receiver h.f. oscillator is seen on the r.f. voltmeter. Then adjust the balance control for minimum reading. The signal output of the balanced mixer is sufficient to drive a small pentode or tetrode as a Class A amplifier; in the writer's transmitter the following tube is a 6AK6, which in turn drives a 2E26 and then a pair of 6146s. The

driving voltage for all tubes is kept below the grid-current point.

Operationwise, little can be said except that one may well forget the problem commonly known in "zeroing" to the received signal. Once the other station is tuned in properly it simply follows that the transmitter is properly zeroed and ready for a quick call or answer.

The only disadvantage thus far encountered has been on 20 meters. On occasion, when some DX s.s.b. phones were heard above 14,300 kc. the temptation to give them a call was great indeed. This seems to be the only case, on the bands covered by this unit, where the external v.f.o. would be desirable.

Strays

With reference to the Minitrack calibration (April, 1957, QST, p. 42) W2GTU points out that Cygnus (for example) is not a star but a constellation.

The Amateur Radioteletype Society announces that literature on RTTY is available from the Society. Address 38-06 61st St., Woodside 77, N. Y.

The mobile conelrad converter mounted alongside the rig under the instrument panel of the author's car.

(The trimmer attached to the tuning gang is a replacement for the original built-in oscillator trimmer built into the gang which was damaged.)



Conelrad Monitoring for the Mobile Operator

A One-Tube Converter for the BC Band

BY EDMOND D. WRIGHT,* W4GFQ

• Those mobile operators who have tried to make the car's broadcast receiver serve both as an i.f. for a tunable converter and as a conelrad monitor have not found it too convenient, since the BC receiver must be reset after each conelrad check. W4GFQ has solved the problem with a simple converter tuning the BC band and working at the same i.f. as the ham-band converter. It will also provide BC-band coverage for any communications receiver tuning to approximately 1500 kc. that does not already include the broadcast range.

CONSIDERING the number of articles that have appeared in *QST* on the subject of conelrad, still another might appear superfluous. However, I venture to say that a large percentage of us still have an ear toward the TV set as a means of complying with the regs. For fixed stations this may not be too bad, but mobile operation presents a different picture.

A device such as the Conelette,¹ whose tuning

is fixed to one of the local BC stations, is also a simple and satisfactory means for a home station. But when you're on the road, you can't always depend on a single station over any appreciable distance. Some means of tuning the entire BC band is needed, and a little extra gain would be an asset.

If you are using the car's BC receiver as the i.f. for a tunable converter, it will provide all the gain you need. However, there is the problem of how to switch back and forth conveniently every ten minutes between the BC receiver and the ham-band converter without having to retune the BC receiver each time.

A possible answer might be a separate tunable converter covering the BC band, and converting to the same i.f. as the i.f. used by the ham-band converter. But will it work smoothly when some of the desired BC stations may be close to 1500 kc.? The answer is that it does work, and very nicely, too. One of our local stations is on 1490 kc. With this station tuned in on the converter, no one could detect that it was not being received directly on the BC tuner itself.

Circuit

The circuit of the converter is shown in Fig. 1. It is a conventional arrangement. Any other

*3631 N. W. 18th Terrace, Miami, Florida.

¹ Lukoff, "Conelette," *QST*, Dec., 1956.

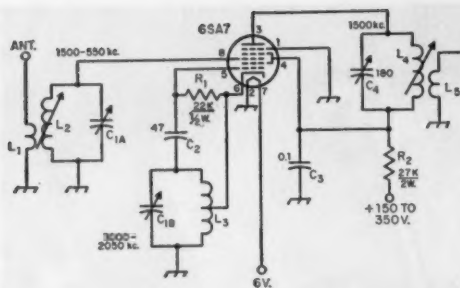


Fig. 1—Circuit of the conelrad converter for mobile use.

C₁—Dual variable capacitor, broadcast-replacement type for superhet receivers, C_{1B} altered as described in the text (approx. 90 μf.).

C₂—47-μf. mica.

C₃—0.1-μf. 400-volt paper.

C₄—180-μf. mica trimmer (Arco type 463).

L₁—See text.

L₂—BC ferrite core loopstick (approx. 230 μh.).

L₃—See text (approx. 65 μh.).

L₄—National XR-50 iron-slug form wound full with No. 32 enam. wire (approx. 85 μh.).

L₅—15 turns No. 28 wound over cold end of L₄.

converter circuit should work equally well, of course. The input circuit C_{1A}L₂ covers the BC band. The oscillator circuit C_{1B}L₃ covers the range of about 2050 to 3000 kc. to produce an i.f. of 1500 kc. The 6SA7 was used simply because it was in the defunct a.c.-d.c. BC receiver that I chiseled from a local radio service shop. This receiver also yielded the dual tuning capacitor C₁ and the oscillator coil L₃. New components may be used, of course, and they are not expensive.

Tuning Capacitor

Plates must be removed from C_{1B} to provide the required tuning range. The oscillator section of the dual unit is the one having the smaller number of plates. Starting at the rear, all rotor plates except five should be removed. It isn't necessary to remove the unused stators. Be very careful to make sure that there are no shorted plates after the modification is complete.

Input Coil

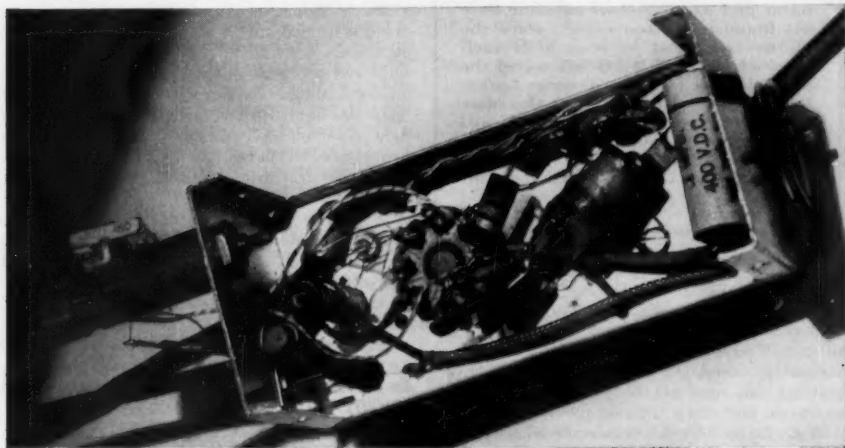
L₂ is a ferrite-core loopstick. It is sold by radio dealers for use as a built-in BC receiving loop. This coil usually comes with a length of wire attached to the ungrounded end and wound

around the loopstick. When unwound, the short length of wire is intended to provide additional pickup if needed. I disconnected this wire from L₂ and, without unwinding it, used it for L₁.

Oscillator Coil

For L₃, I used the oscillator coil I found in the a.c.-d.c. receiver. Locating the end of the winding going to the oscillator grid of the converter tube, I removed 36 turns after softening the wax with a soldering iron. However, this may not mean too much because oscillator coils vary widely in dimensions, and also in the method of obtaining feedback. Unless you are familiar with the original circuit, it might be easier to wind a new coil. If the original coil is used, only a turn or two at a time should be removed, after the first 10 or 15 turns, until the oscillator frequency is about 2050 kc. with C₁ at maximum capacitance.

A substitute coil would be approximately the same as L₄, close-wound with 60 turns No. 30 enameled, and either tapped at about one third of the way up from the ground end, or with a separate cathode coil consisting of about one third the number of turns on L₃, wound over the ground end of L₃, and wound in the same direction. The



Top view of the converter for mobile conelrad monitoring with cover removed. The oscillator coil L₃ is to the right of the tube socket. The loopstick used for L₂ is to the left. The i.f. output-circuit components are mounted externally as shown at the extreme left.

bottom end of this winding should be grounded.

Output Circuit

A National XR-50 iron-slug form was used for L_4 . The winding space is wound full with No. 32 enameled wire. L_5 consists of 15 turns of No. 28 enameled wire wound over the cold end of L_4 , with a coat of Krylon and a thin piece of plastic wrapper between the two windings.

The top-view photograph shows an Arco type 460 trimmer for C_4 . This trimmer has a maximum capacitance of 100 $\mu\text{mf.}$ and was used with a 100- $\mu\text{mf.}$ fixed mica in parallel. The type 463 has a maximum capacitance of 180 $\mu\text{mf.}$ and, if this is substituted, the fixed capacitor should not be needed.

Construction

The foundation for the converter is a $2\frac{1}{4} \times 2\frac{1}{4} \times 5$ -inch aluminum box (made by both IC and Bud). The tuning capacitor and the tube are mounted on the bottom. The arrangement of components inside the box isn't critical. I placed L_1L_2 at the rear, near the signal-grid terminal of the tube socket, and L_3 toward the front near the oscillator-grid terminal. L_4L_5 was mounted externally at the rear to reduce "birdies."

Power Supply

Power for the converter may be taken from the BC-receiver supply since the current requirement is negligible. With 150 volts at the positive B terminal of the converter, the converter draws 3.75 ma. and the drop across R_2 is about 100 volts. The converter will work well at supply voltages up to 350 or more without change in the resistance value of R_2 . The current drain will, of course, be higher at the higher supply voltages, and the wattage rating of the resistor may have to be increased. If current drain is an important consideration, the resistance value of R_2 can be increased in proportion to the increase in supply voltage.

Adjustment

The oscillator can be checked for proper frequency range by the use of a grid-dip meter before power is applied or, after power has been turned on, by listening on a communications receiver covering the 2-to-3 Mc. range.

Now connect an antenna to the input of the

converter and connect the converter to the BC receiver. Set the BC receiver at 1500 kc. (or to the frequency that you normally use with your ham-band converter). Turn on the power and adjust C_4 and the slug of L_4 for a peak in noise (if you can't find a signal). Then adjust the slug of L_2 for maximum response.

Switching System

Fig. 2 shows how the converter can be connected into a convenient switching system. K_1 represents a spare set of contacts on the change-over relay. (In my Babcock MT-5B I use the

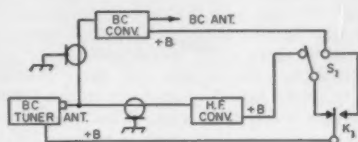
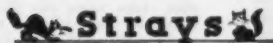


Fig. 2 — Block diagram showing a switching system for the conelrad converter. K_1 represents a spare set of contacts on the change-over relay. S_1 is a s.p.d.t. toggle. With K_1 in the receiving position as shown, power from the BC receiver may be applied to either the BC converter or the ham-band converter. With K_1 in the transmitting position, power is applied to the BC converter for conelrad monitoring during transmitting periods.

contacts that were originally provided to open the speaker voice coil while transmitting.) With the relay in the receiving position, plate power from the BC receiver can be switched to activate either the ham-band converter or the BC converter by the s.p.d.t. toggle S_1 . With the relay in the transmitting position, power is applied to the BC converter so that you can hear the BC station you are monitoring while you are transmitting. This works without BCI while I'm transmitting on 10 meters. I haven't tried transmitting on other bands, and it's possible that the BC receiver might have to be treated for BCI for the lower-frequency bands. If there is some objection to the BC signal while transmitting, a visual device could be applied to the BC receiver.

In conclusion, I might point out that this converter will provide broadcast-band coverage with any receiver that does not already include this band, provided that the receiver will tune to approximately 1500 kc.



W2QBB suggests that the small plastic boxes which are about 4 X 8 X 1 inches in size are just right for storing the coils of the Heathkit grid-dip meter. He pastes the correlation chart for the low-frequency coils on the cover of the box.

The Voice of America needs some radio broadcast technicians at a salary of \$5915 per year. For full details write to U. S. Civil Service Ex-

aminers, U. S. Information Agency, 1776 Pennsylvania Ave., NW, Washington 25, D. C. and ask for announcement No. 98B.

FEEDBACK

The figures in the last four lines of the meteor shower table (April, 1957, *QST*, p. 23) given as the velocity and period of the daylight showers are displaced one column to the right. Actually these figures are for the hourly rate, as observed by radio means, and the velocity, in that order.

Lighthouse Tube Tank Circuits for 432 Mc.

Easy-to-Build Amplifiers or Frequency Multipliers for Surplus Tubes

SOME TIME AGO W4ECL, Pensacola, Fla., wrote that he had been experimenting with flashing copper tank circuits for use with surplus lighthouse tubes. Would we be interested in the details of some of the equipment that had resulted? We were, and if you're the experimenter type who likes to make do with what you have around, we think you'll be interested, too.

W4ECL's tank circuits will never win any beauty prizes, but they are built on good sound principles — and they work. What's more, they make use of tubes that many of us have kicking around from our surplus-collecting days. Either stage can be run as an amplifier on 432 Mc., or driven as a tripler from any 144-Mc. stage that delivers a few watts.

Using the 2C43

Several versions have been constructed, two of which are shown here. First is one designed to take the small lighthouse tubes that have been so plentiful on the surplus market. Best results have been obtained with 2C43s, though 446As also have been used. The receiving counterpart of the 2C43, the 2C40, would probably also do, though at somewhat reduced input. Details are shown in drawings and photographs.

The tank circuit is a 432-Mc. half-wave line (tube at one end, tuning capacitor at the other; plate voltage fed in at electrical midpoint) designed for grounded-grid service. Mounting the lighthouse type of tube and making connection to its elements has always been thought of as difficult mechanically, but these units make it look easy. Nothing more refined in the way of tools is called for than sheet-metal shears, a fairly heavy soldering iron and a hack saw.

The end of the plate line is slotted with a hack saw and then squeezed slightly to make it

fit the 2C43 plate cap snugly. The tube is held in alignment by the cathode ring. This is a square piece of flashing copper held in place by two $\frac{5}{8}$ -inch ceramic stand-off insulators. Contact fingers made of brass shim stock are soldered to the outer side of this ring. The grid plane of the tube makes contact to the end of the trough. Here an end plate of brass shim stock has a hole

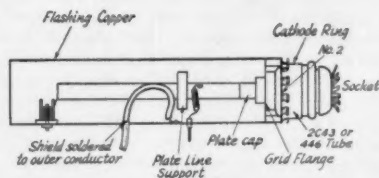
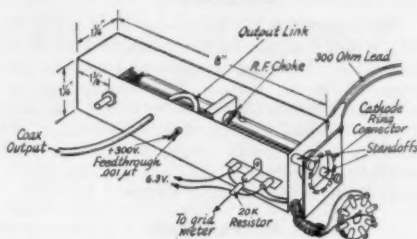


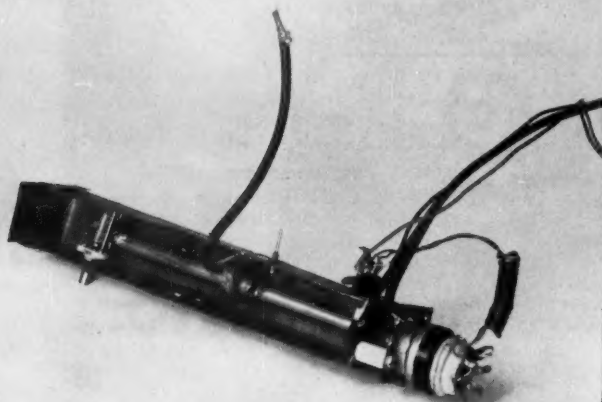
Fig. 1 — Detail drawing of the tank circuit for 2C43 or 446A tubes. Lower portion is top view.

large enough to pass the plate terminal. Radial shear cuts in the plate give it resilience for a spring contact to the grid plane.

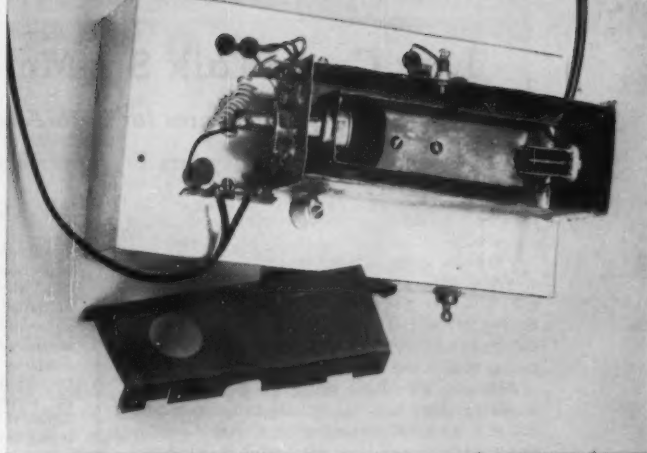
Heater connections are made with an octal socket, but this is merely pushed onto the tube pins and is not mounted to any support. Heater

Tripler or frequency-multiplier stage using the 2C43 lighthouse tube. Bifilar r.f. choke at the right is in heater line. The Twin-Lead is for coupling in the drive from the preceding stage. Output is taken off through coax, without the use of fittings.

QST for



Trough-line amplifier or frequency multiplier for the 2C39A. Copper cover, lower left, was added after it was found that the open trough wasted much of the power output by direct radiation.



voltage is fed through bifilar chokes. These should be wound for the driving frequency, so their size depends on whether the stage is to be used as a tripler or an amplifier.

The half-wave plate line is supported near its point of lowest r.f. voltage, so the quality of insulation here is not too important. Plate voltage is fed through an r.f. choke, via a feed-through by-pass. Output is coupled through a loop made from the inner conductor of a piece of coax. The braid is cut back to the point where the coax runs through the trough wall, where it is soldered to the outer surface. The inner conductor, with its insulation intact, is made into

The 2C39A Amplifier

The larger of the two amplifiers is a higher-powered version using a 2C39A, mounted inside the line. The inner conductor is a trough instead of tubing. Contact fingers of brass shim stock are soldered to the inner surface of its end plate, making contact to the plate sleeve of the tube. Similar spring fingers contact the grid sleeve, on the outer surface of the end plate on the outer conductor. Cathode and heater contacts are made at the tip of the tube.

As in the other amplifier, the plate circuit is a half-wave line. It is supported on ceramic insulators that do not show in the photograph. Plate voltage feed and output coupling methods are similar to those employed in the other amplifier. Ventilating holes are punched in the bottoms of both troughs, and in the cover of the outer one. These seem to have no effect on the performance of the amplifier. Bias voltage developed on the grid appears on the outer conductors of both amplifiers, so these must be insulated from the chassis or negative end of the system. The voltage also appears on the coaxial feed line, so the amplifiers cannot be used with grounded antennas unless some form of capacitive coupling is provided for both conductors of the coax.

Operation

When the stages are used as triplers W4ECL takes the drive from an SCR-522 transmitter. This is equipped with 300-ohm output, and the line from it is connected to the cathode and grid elements of the amplifier through blocking capacitors. This rather hazy method of coupling the drive seems quite adequate for the purpose, for there is no trouble in getting enough grid drive to make the stages operate efficiently.

Plate voltage used is between 250 and 300 volts. At this level, the 2C43 stage draws 25 ma. off resonance, and 15 to 20 ma. when tuned on the nose. Current to the 2C39A is 60 ma. off resonance, and around 50 ma. tuned and loaded properly. Efficiency is around 30 per cent when

(Continued on page 158)

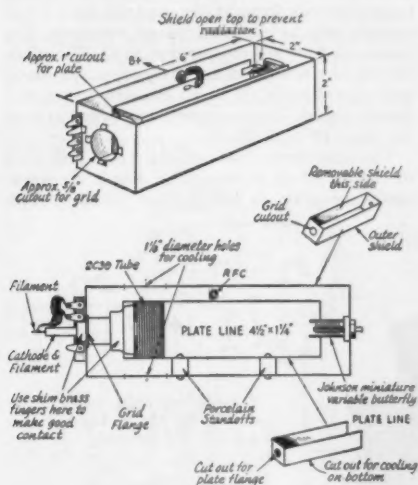


Fig. 2 — Tank circuit for 2C39 has tube inside inner conductor. Details of construction that are not apparent from photographs are shown.

a coupling loop and soldered to the inner surface of the trough. Result: coaxial coupling with no expensive fittings.

Low Cross-Talk Six-Meter Converter

Design Features for High-Activity Areas

BY FRANK C. JONES,* W6AJF

THE problem of receiving weak signals in the six-meter band through local stations has become acute in many localities. One or more strong signals can cause cross modulation or cross talk into the desired signal and so apparently cover the band. This often creates ill feeling as amateurs usually blame the owner of the transmitter that is the source of the trouble.

Actually, the blame should be placed on the receiver, where a strong signal can cause mixing action in an r.f. stage or a mixer circuit. Communications receivers have gone over to r.f. tubes which are designed for minimum cross-modulation effects, and to mixer tubes which will stand greater inputs before mixer action takes place between undesired signals. It is time to treat converter design in the same way.

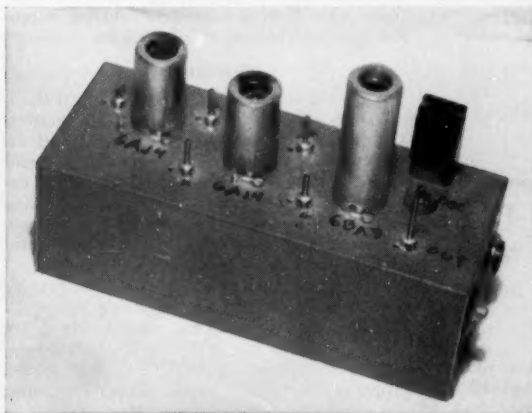
Six-meter converters have been designed for greatest sensitivity with little thought about other defects. Grid-leak bias mixers are the rule since these work very well on weak signals and only require a volt or less of injection from the oscillator for maximum sensitivity in their mixer action. By the same token, a strong signal or two in the band can cause mixing action, and thus cross modulation, on the desired signal. This is fed into the i.f. system and no degree of selectivity there will be of any help. The answer is to use a more linear type of mixer such as a low- or medium- μ triode, with cathode bias instead of grid-leak bias, or to use a screen-grid mixer tube such as a 6BA7. The noise figure of this pentagrid mixer is lower than that of older types such as a 6SA7, so it should be better for operation at 50 Mc. The 6BA7 noise figure is higher than for a triode mixer, but its freedom from cross-modula-

• With 50-Mc. activity rising steadily, it is becoming more obvious to 6-meter men all the time that a hot converter is of little value if one or two strong local signals can tie it up in knots. Here is a simple converter design aimed at preventing much of the cross-modulation trouble that is currently all too common in densely-populated areas. Its noise figure is lower than you'll ever need, and it can be adjusted readily to give uniform response across the band.

tion effects is better, even when enough radio-frequency amplification is used ahead of it to arrive at a low over-all noise figure.

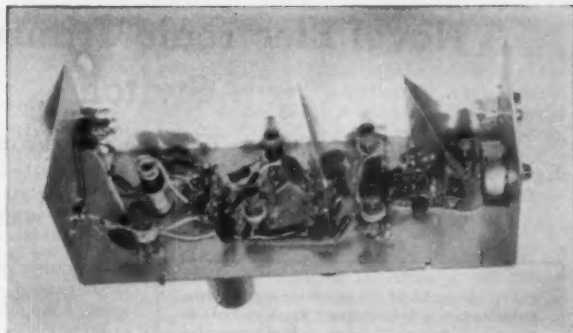
The six-meter converter illustrated here was built to test some of these ideas. It consists of two 6AJ4 grounded-grid r.f. stages and a 6BA7 oscillator-mixer. The grounded-grid r.f. amplifier is fairly free of cross-talk and has a very low noise figure. It also is exceptionally stable and free of regenerative effects. The gain per stage is not over 3 or 4, thus permitting the use of two stages ahead of the 6BA7. This allows use of band-pass tuning to cover 50 to 54 Mc., and the extra tuned circuits help to eliminate image responses. The image rejection was measured at 80 db. The spurious signal response to any frequency was measured at values of 60 to 80 db. down from the desired signal. This is a great improvement over the usual 10 to 30 db.

The noise figure runs between 2 and 3 db. over the band, which is more than ample for weak-signal reception in the quietest location. This



The low cross-talk converter for 50 Mc. is built in a 4 x 8 x 2-inch box.

Interior of the W6AJF 50-Mc. converter. The grounded-grid r.f. amplifier stages have small isolation shields across their sockets.



low noise figure also makes the converter a good first i.f. system for the 432- or 220-Mc. bands, or even 144 Mc. A signal of 0.25 microvolt will produce a good usable response in a reasonably selective communication receiver.

The i.f. tunes from 30 to 34 Mc. A lower i.f. range can be used if a higher-frequency crystal is used in the 6BA7 oscillator circuit. The oscillator coil should tune through the desired injection frequency, and the 6BA7 plate circuit should be broadly resonant at the i.f. output frequency. The latter calls for high L/C ratio and tight link coupling on the output coil.

Band-pass circuits between stages permit higher- Q tuned circuits, resulting in better image rejection and more uniform response across the band than would be possible with capacitive coupling. All of the 50-Mc. coils were wound with 10 turns on an iron-slug coil form, $\frac{3}{8}$ -inch diameter, to cover $\frac{3}{8}$ -inch winding length. Nine turns may be used with $\frac{3}{8}$ -inch CTC iron-slug tuned forms. Two-turn links on each interstage coil provide a good band-pass effect.

The cathode of each grounded-grid stage taps into the coil at about 3 turns up from the grounded end. This provides about the best "mismatch"

for optimum noise figure, with only a moderate reduction in over-all gain. The cathode input resistance is a little over 100 ohms for a 6AJ4 tube, so a good noise figure can be obtained when it looks into a 200- to 300-ohm input impedance. The usual 50-ohm coax input circuit should tap into the input coil approximately half as far up as the cathode tap, or at $1\frac{1}{2}$ turns.

The first grounded-grid stage is protected from damage from the station transmitter by means of a grid leak 50,000 to 100,000 ohms, to limit grid current during transmission periods. The grid is grounded for r.f. by means of .002- μ f. ceramic capacitors, with very short leads to chassis ground lugs. Some r.f. leakage across an antenna relay can convert a fine new grounded-grid amplifier tube into a noise generator with no amplification, unless this precaution is taken, or the cathode d.c. circuit is broken by auxiliary contacts on the relay.

The second r.f. stage has a gain control in the cathode circuit. This is used only in case of operation near another six-meter station with a signal strong enough to overload the 6BA7 tube. Normally, this 2000-ohm variable resistor is left

(Continued on page 168)

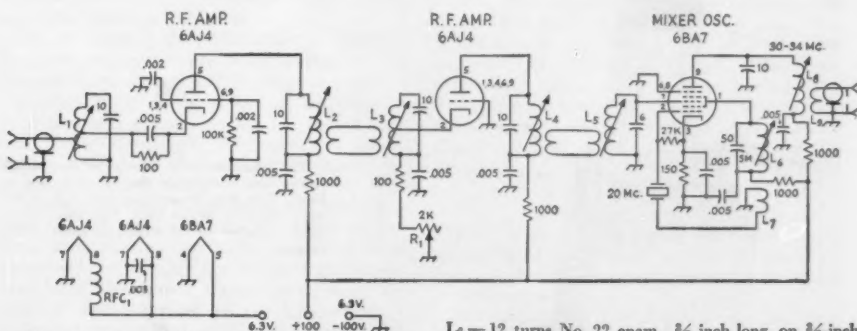


Fig. 1—Schematic diagram and parts information for the 50-Mc. converter. Capacitor values below .001 are in μ f. Resistors are $\frac{1}{2}$ watt. SM indicates silvermica.

L_1 - L_5 inc.—10 turns No. 22 enam., $\frac{3}{8}$ inch long, on 5/16-inch iron-slug coil form.
Cathode taps at 3 turns; antenna tap at $1\frac{1}{2}$ turns. Link windings each 2 turns.

L_6 —12 turns No. 22 enam., $\frac{3}{8}$ inch long, on $\frac{3}{8}$ -inch brass-slug form.
 L_7 —1 turn insulated hookup wire; see text.
 L_8 —17 turns No. 22 enam., close-wound, on 5/16-inch iron-slug form.
 L_9 —3 turns insulated wire around cold end of L_8 .
 R_1 —2000-ohm potentiometer.
 RFC_1 —20 turns No. 26 enam. $\frac{1}{8}$ -inch diam. close-wound. Slip inside spaghetti tubing.

A Novel Electronic Transmit-Receive Switch

Improved Performance Through An Unconventional Method of Application

BY SAMUEL SABAROFF,* W3DM

• The thought of connecting a receiving tube across a transmitter tank circuit is startling, to say the least. But once the shock wears off, the idea begins to make sense, in terms of logical operation of an electronic t.r. switch.

VARIOUS types of electronic t.r. switches have appeared in the past, many with indifferent success. Their defects have generally included one or more of the following major items: generation of TVI, loss of receiver sensitivity, degradation of receiver signal-to-noise ratio, instability, dependence on physical placement, dead spots in the band, and crosstalk. A logical analysis of the difficulties mentioned above led to the design of a simple t.r. switch in which practically all of these defects have been eliminated.

The first big step in the new design was to acknowledge the fact that the t.r. switch could be considered to be basically a part of the transmitter and should be contained therein. It was further accepted that best reception be restricted to the band on which the transmitter happens to

be operating, and that the t.r. switch output be broad-banded. This automatically took care of most of the difficulties, as will be shown later.

An analysis of transmitter output circuits showed that from the point of view of a signal coming from the antenna, a stepped-up voltage appeared at the plate of the transmitter output tube. In addition, spurious and out-of-band signals are discriminated against at this point, because of the inherent selectivity of the plate tank circuit. Actually, the transmitter output circuit when operated in reverse can be considered to be an efficient input circuit for receiving.

From the point of view of the received signal, the tank can be considered to be an absorption trap. This accounts for the dead spots that appear when a signal close in frequency to the tank circuit is picked off the transmission line. However, this absorbed energy is responsible for the voltage at the plate tank, so that dead spots do not appear when signals are picked off at this point.

A transmitter tank circuit was set up in the laboratory and the remarks above essentially confirmed. The logical question then arose as to what would happen when the high voltages appearing on the transmitter tank circuit are applied to the grid of a tube during transmission.

*Lynmar Engineers Inc., 1432 N. Carlisle St., Philadelphia 21, Pa.



«
This manufactured version of the circuit shows how compactly the t.r. unit can be built. The box dimensions are 1½ inches square by 2¼ inches high. The coax output cable attaches to the fitting in front of the tube.
»

Unfortunately, this kind of information was not available and it was necessary to get it the hard way.

T.R. Tube Requirements

The main tube requirements were low output capacitance, excellent grid to plate shielding, high mutual conductance and, most important, the ability to withstand a high grid-to-cathode voltage. In addition, the tube had to be small in physical size and relatively inexpensive. A search of both transmitting and receiving tube manuals did not reveal a tube that met these requirements. This meant, therefore, either that a tube would have to be developed for the purpose or some existing tube would have to be used in an unorthodox fashion. Needless to say, the latter course is the one that was pursued. A group of tubes was selected that satisfied the circuit re-

Circuit and Use

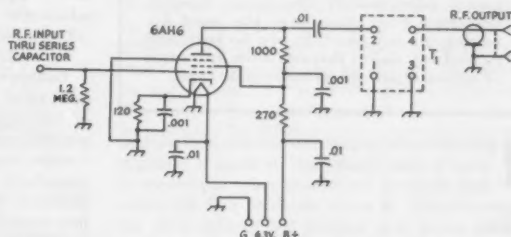
The resulting t.r. switch circuit diagram is shown in Fig. 1. The physical dimensions of the version shown in the photograph, excluding the tube, are $1\frac{1}{2} \times 1\frac{1}{2} \times 2\frac{3}{4}$ inches, so it is quite capable of being mounted in most transmitters. A Teflon-insulated feed-through terminal is provided for connecting to the plate-tank voltage divider, together with a simple fitting for attaching the RG-59/U coaxial cable that feeds the receiver.

The power requirements for the type 6AH6 tube are 6.3 volts for the filament and 100 to 150 volts d.c. at approximately 13 ma. for the screen and plate. This power is quite nominal and is generally available from the transmitter supply. In any event, the junk box surely contains the materials for the required supply.

The t.r. switch should be mounted as close to

Fig. 1—Circuit of the transmit-receive switch. Resistors are $\frac{1}{2}$ -watt composition; capacitors disk ceramic. Capacitances are in μ f. See text for method of connection to transmitter tank circuit.

T₁—Broad-band output transformer (Lynmar type TRS-1T).



quirements, and then deliberately blown up in an effort to discover the maximum safe r.f. voltage that could be applied between grid and cathode.

The final choice was the type 6AH6 tube. Experiment showed that the grid of this tube can withstand peak r.f. voltages of approximately 250 volts for long periods of time without breakdown. Other tube types broke down with voltages ranging from 100 to 400 volts. Unfortunately, the tube types withstanding the higher voltages did not have suitable electrical characteristics and were therefore discarded.

The shielding of the 6AH6 was also found to be quite adequate, there being negligible feed through when deenergized (tube cold). Another important factor is the saturated output with maximum grid voltage. In the t.r. switch that was finally developed, the maximum r.m.s. voltage output to the receiver is limited to approximately two volts.

The input voltage to the t.r. switch is stepped down to a safe value by means of a simple capacitive voltage divider. Obviously, greater received signal will result with low power transmitters than with high power transmitters, since the received signal applied to the t.r. switch is multiplied by the gain in the tank circuit and then diminished by the ratio of the capacitive voltage divider. With transmitters of 150 watts or less, the received signal applied to the t.r. switch may be increased by as much as 15 to 20 db. as compared with direct connection to the transmission line.

the plate tank as is practicable so that stray fields and ground currents will be minimized. For example, in the B & W Model 5100 transmitter a logical mounting is at the right between the multiplier and the front panel while in the B & W Model L 1000-A linear amplifier, a good spot is between the plate tank and the rear panel. Similar locations may be found in most other transmitters. The leads supplying power to the t.r. switch should be dressed away from any r.f. fields, and the shield of the RG-59/U cable feeding the receiver should be grounded to the transmitter cabinet at the point of exit.

The capacitive voltage divider for feeding the t.r. switch is composed of the t.r. switch input capacitance (about 10 μ f.) and a series capacitor for connection to the plate tank. A conservative value of the series capacitor for an a.m. plate-modulated final can be calculated by the following formula:

$$C (\mu\text{f.}) = \frac{2500}{\text{d.c. plate volts}}$$

The series capacitance as calculated above may be doubled in value when the final is not modulated, as in c.w., grid modulation or in a linear power amplifier.

The series capacitance is generally less than 20 μ f. The capacitor should be of the low-loss variety and should be capable of withstanding the tank voltage. For plate voltages of 800 volts or less, the disk type ceramic capacitors have been found to be adequate. For greater voltages, an inexpensive capacitor may be fab-

(Continued on page 160)

A 200-Watt Balun Coupler for Center-Fed Antennas

Feeding Balanced Line from Pi Network

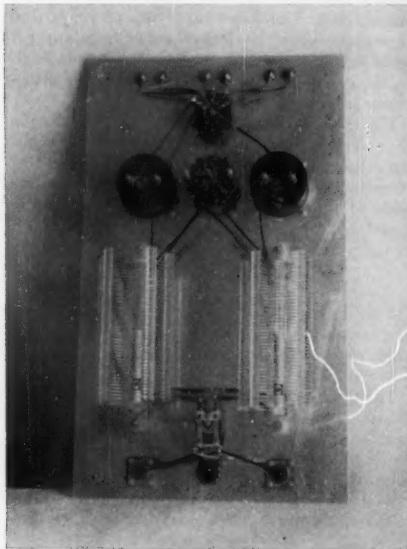
BY J. M. SHULMAN,* W6EBY

• In feeding a balanced antenna system, such as a half-wave dipole, from a pi-network output circuit, proper operation requires the use of some device for producing a balanced connection to the line from the unbalanced output of the pi section. This can be done with a link-coupled antenna tuner but the tuner requires adjustment. The balun coupler described here eliminates the need for tuning on any band. It can be switched to feed any one of three or more antennas of either dipole or folded-dipole type.

THE center-fed dipole antenna remains popular even in this "beam age" because it is simple and effective. Its driving-point impedance of approximately 75 ohms unfolded and 300 ohms folded make it a natural for feeding with 75- or 300-ohm Twin-Lead, or 300-ohm Ladder Line. It can be either horizontal or vertical with numerous possible supporting arrangements. Its main disadvantage is that it is good for one

* 789 Garland Drive, Palo Alto, Calif.

Rear view of coupler panel which serves as mounting plate for all components. Panel is aluminum, preferably at least $\frac{1}{16}$ inch thick.



band only, and an easy way out of this limitation is to use more than one.

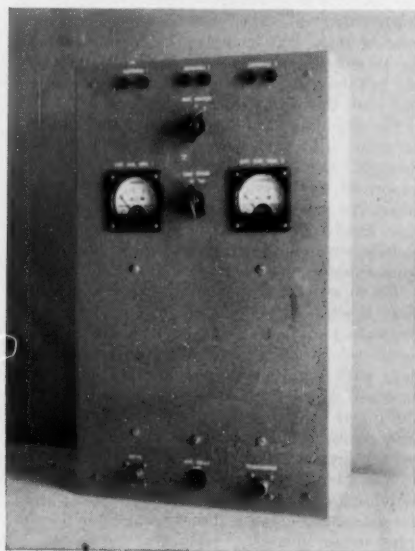
A second problem arises because the centered antenna system is balanced and the output circuit of most modern multiband transmitters is a single-ended pi network. How to get power from a coaxial line into a balanced line? Antenna couplers are one answer; balun coils offer another one — a preferable one if you want to eliminate additional tuning controls.

Characteristics

Balun-coil theory is outlined briefly in recent editions of the *Handbook*. The balun coil consists of two separate coils wound on the same axis, with the wires of each coil spaced to give a characteristic impedance Z_0 equal to twice the low impedance and half the high impedance to be matched. It might be described as a two-wire line wound into a coil and it retains the characteristics of the two-wire line even though lumped in a coil.

For parallel line currents, it acts as a choke, isolating one end from a ground connection at the other end. It is effective over a wide frequency

Front view of coupler mounted in a $16\frac{1}{2} \times 10 \times 4\frac{1}{2}$ -inch box. The box is made of $\frac{3}{8}$ -inch plywood and is mounted on a window sill directly below the entry point of the three balanced lines from antennas.



10 per cent. The meters were included in this unit primarily to verify and check balance, and they could be omitted with the assurance that the line currents will be equal if the antenna itself meets the conditions of balance mentioned above.

Aside from the assurance of having good balance and minimum radiation from the feed line when using the balun coupler, a major operating advantage is that no antenna tuning adjustments are necessary when changing bands.

How does it work? This question will probably be on your mind before deciding to invest in a set of balun coils.

The other night, W6QPM, a few houses down the street, pushing 800 watts into a 3-element 14-Mc. beam 50 feet high, worked UA1OE and got a 559 report. A short while later, W6EBY, nursing 150 watts through the balun coupler into a vertical dipole, worked him and got the same report! Let us disregard the statistics on our relative ratios of worked/called and other such comparative data, and close the subject by saying that it *can* happen!

Acknowledgment is made to Mac Petersen, W6BIQ, and Les Worcester of Illumitronic Engineering Co. for their assistance.

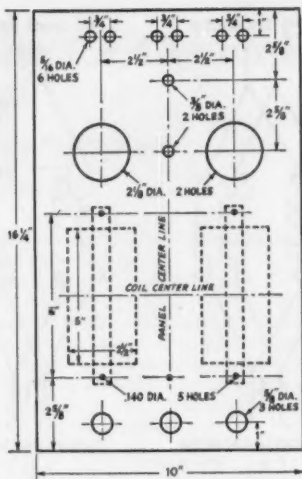


Fig. 3 — Panel layout of holes, showing dimensions of balun coils. Coil centers should be at least $4\frac{1}{2}$ inches apart.

Strays

If you'd like to be an electronic technician in Alaska, at a salary of some \$5000 to \$5600 per year, CAA has some openings. For full details and application forms, write to The Executive Secretary, Anchorage Joint Board of U. S. Civil Service Examiners, Pouch 9, Anchorage, Alaska.

K2BDA and K2DPS were recently working two-meter mobile while parked along the edge of a road one dark night after a meeting of the Hamilton Township Radio Club, when a police cruiser pulled alongside to investigate. The officer, after being persuaded that all was OK, returned to the cruiser and was heard to tell his companion officer, "Phooey, they don't get music on their radio, either."

KN2ZHH had his first QSO four minutes after receiving his ticket from FCC.

K4CAP has his call letters prominently displayed at his front door. Recently a salesman came to the door and asked for Mrs. Kayforcap. — W8BYB

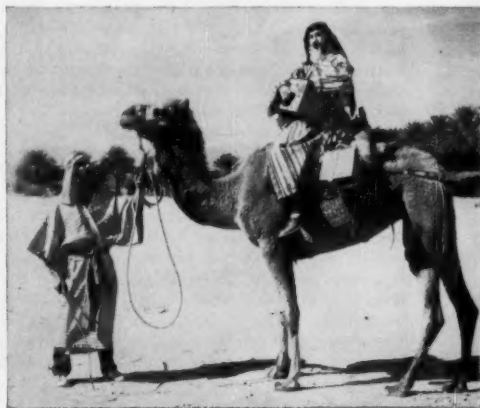


The latest thing in no-ignition-noise mobiling is demonstrated by Bud Pearson, K6DXA/camel-in-motion. Bud was among the nine amateurs who set up the first amateur radio exhibit at the recent National Date Festival, Indio, California.

W5BVW/VO1 now has evidence that the air age is here. Two QSLs received by him on the same day were GM3FLY and W5JET.

What's in a call? K9DEN is a Den Chief of a Cub Scout pack. — W9QGR

Now in the States is 4X4CR, who would like visitors. His QTH: Moshe Fleisher, 131 Corbin Place, Brooklyn 35, N. Y.



Quist Quiz

This simple wiring question was suggested by a problem submitted by KN6YAR.

Given three lamps and four single-pole switches, wire the lamps and switches so that switch 1 turns on lamp 1, switch 2 turns on lamp 2, switch 3 turns on lamp 3, and switch 4 turns on all the lamps regardless of the conditions at switches 1, 2 and 3. Don't clutter up the circuit with rectifiers, relays or what-have-you; all you need is the above, some wire, and a voltage source.

The answer to last month's Quiz lies in the high internal resistances of the exhausted batteries. At very low current the voltage measurements were close to the no-load terminal voltages of the batteries. As the load was increased and higher current was demanded, the drop across the center battery (the current in the circuit times the internal resistance of the battery) exceeded the no-load terminal voltage. With the numbers shown, the internal drop must have been 7 volts, accounting for a measured voltage of -2 under load conditions ($7 - 5 = 2$).



June, 1932

... The lead article twenty-five years ago dealt with that perennial problem — greater selectivity for receiving. In this article James Lamb, then the technical editor of QST, discussed the various factors affecting selectivity and promised a constructional feature on a "single-signal" superhet in an upcoming issue.

... W9FJV told how to use a Ford spark coil as a vibrator in developing high voltage d.c. from 6-volt batteries.

... "Fun on Five Meters" outlined some of the simple gear that was being used on various field tests.

... The month's "lesson" was contained in an article by George Grammer on "The A, B and C of Amplifier Classifications."

... In Strays, W1BBJ suggested the use of aluminum pans for radio chassis, while another fellow, unidentified, thought that the Handbook should have aluminum covers which could be removed and used for shielding.

... A DX contest was announced in which contestants would report only their 20 best DX contacts.

Strays

What's in a name? C. W. Ham, W4NYX, just made DXCC — on phone. And he lives on Beam St.

K6YRA is a member of the UCLA Radio Club — which is W6YRA.

DX Contest High Claimed Phone Scores

Based on logs received at ARRL through late April, the following are claimed scores in the 23rd ARRL International DX Competition of last February and March. More entries are en route, especially from overseas points. These, together with the intensive checking program now underway, will cause some changes. Figures indicate claimed score, multiplier, and number of contacts.

Single Operator			W5ALB...		
W2ATE...	844,584	312 903	W9JYU...	51,510	101 170
K2AAA...	717,024	308 776	W8SDD...	50,490	99 170
W6YY...	426,930	214 665	W1YQC...	48,438	78 207
W3MSK...	398,286	218 009	K9EWL...	46,740	76 205
W8BKP...	322,875	205 525	W8BTI...	45,900	100 153
W4OM...	304,200	200 507	VE2JR...	45,000	91 168
W3ECR...	298,374	223 446	W3IMV...	45,018	82 183
W9EWC...	286,050	182 527	W2TQR...	42,552	72 197
W6VSS...	271,078	166 845	W1QWI...	41,735	85 165
W8NWO...	232,245	195 397	W9RBI...	40,548	109 124
W9EDX...	229,104	172 444	W1MXX...	39,615	95 139
W4KWY...	220,698	201 366	W0CSU...	37,584	87 144
W8NXP...	216,594	191 378	W1DLC...	35,728	88 136
W4DQH...	213,120	180 396	W3IYE...	35,343	77 153
W8ZOK...	200,725	155 433	W0GUU...	33,615	83 135
W9NZM...	187,312	184 340	W2DMR...	32,913	69 159
W1ONK...	180,334	154 393	W9MBF...	32,472	82 132
W3GHS...	179,180	170 352	W0GEK...	32,160	67 160
W8BF...	160,356	161 332	W1OGU...	32,085	69 183
VE4RO...	157,209	139 378	W1KKT...	31,572	77 138
W1PST...	131,616	144 306	W9VZP...	31,680	66 160
W3ALB...	129,861	141 307	W8QAD...	30,441	73 139
W3HIX...	116,983	131 299			
W1BIH...	114,816	128 300			
K4CTU...	107,442	127 282			
W8DUS...	99,432	136 229			
W1FZ...	83,570	122 229			
K4LPW...	82,215	105 261			
W8AJW...	79,677	117 227			
W5KC...	74,295	117 213			
W9JIP...	72,360	120 201			
W3DRD...	72,102	122 197			
W9WKU...	71,721	117 204			
VE5VL...	66,096	102 221			
W9GIL...	63,630	101 210			
W5DQK...	62,521	103 203			
VE5RU...	59,200	100 197			

Multiple Operator

W3DHM...	271,584	184 492
W8NGO...	268,488	198 452
W3WQN...	206,298	146 471
W3EBG...	143,264	148 324
W3EQA...	104,020	140 249
W4YHD...	92,256	124 248
VE3DMT...	84,556	104 272
W3KT...	78,165	109 239
W3GRF...	70,200	108 218
W3CUB...	51,597	91 189
K6EXO...	38,640	80 161
W7TMZ...	33,033	77 143

Caught in the cross fire were these top-ranking competitors outside the U. S. and Canada:

Single Operator			Multiple Operator		
KH6IJ...	466,074	81 1918	DJ2YL...	29,280	32 306
KH6PM...	157,182	67 782	KA2FQ...	28,866	34 283
F8PI...	140,616	56 865	CO2HB...	25,896	26 338
HH2RM...	131,157	57 769	DL9MZ...	24,428	31 265
HC2BH...	108,228	58 622	OH3RA...	23,040	40 192
ON4OC...	106,062	66 537	VR2BC...	22,923	27 283
ZL1MQ...	95,676	67 476	G3COJ...	22,788	54 141
CT1PK...	94,464	64 492	Z8SOA...	22,770	30 253
Z8SJY...	89,802	54 559	KP4DH...	21,582	33 222
Z8SG...	88,992	48 618	G2DYV...	21,204	38 186
E1SI...	81,276	52 527	XE1QB...	17,416	28 210
G3DO...	80,288	52 515	SM5AI...	16,870	35 162
KL7AZN...	63,081	43 496	F8LE...	16,380	26 210
SV0WT...	61,236	63 324	OZTBO...	16,275	35 155
G3HJJ...	51,948	52 334	KA5ZS...	14,850	22 225
IIASM...	47,799	47 339	P2MCM...	13,888	31 116
OZ3TH...	42,237	39 362	H9RG...	13,536	32 141
VP5DS...	40,590	30 455	SM6BT...	13,338	27 166
OH5QN...	40,188	34 394	E43LI...	12,975	25 173
H18KE...	40,128	44 304	VQ3ES...	11,088	21 176
XE1RE...	40,071	37 361	DL9SN...	10,902	23 158
ZE2KR...	39,780	39 340	PA0VB...	10,890	30 121
SM5WE...	36,049	47 257	LA8WE...	10,143	23 147
Z8SNZ...	35,520	40 296			
EA8CF...	33,670	35 328			
IIAMU...	30,960	40 258			
DL4SK...	30,192	34 297			

A c.w. preview next month. — P. S.

A One-Tube Two-Meter Rig with Transistor Modulator

Direct Frequency Control at 144 Mc.

BY R. J. SCHLESINGER,* K6LZM

THE TWO-BY-TWO-INCH HANDFUL shown in the accompanying photograph is a complete r.f. section for a low-powered 144-Mc. transmitter. Despite its small dimensions, the rig is not a toy. It delivers enough power output for good communication around the Los Angeles area, and it has covered the 100-mile hop to San Diego on numerous occasions.

It incorporates two principal elements of novelty. One is the use of direct frequency control, with a 7th-mode overtone crystal. This does away with frequency multipliers, effecting a saving in power consumption, and greatly reducing the possibility of radiation on unwanted frequencies. The other item of special interest is the transistor modulator, shown in schematic form, Fig. 2. Though it was built for use with the tiny r.f. section described, it can be employed with any low-powered rig that requires about one watt of audio power for modulation.

Using 144-Mc. Crystals

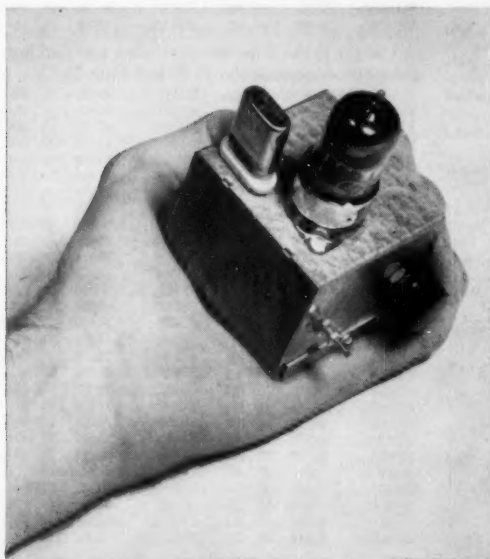
The crystal oscillates on 144.8 Mc., using its 7th overtone. Crystals for this frequency are now made by several manufacturers, and are supplied for amateur use at about 9 to 10 dollars. This one came from the Midland Manufacturing Co.,

*2024 MacArthur St., San Pedro, California.

• The frequency at which direct crystal control can be used has been rising steadily in recent years. Here we have a tiny r.f. section for use on 144 Mc. that employs crystal control at the operating frequency. Extremely low power consumption and freedom from radiation on unwanted frequencies are two of its advantages. A companion modulator using transistors enables the transmitter to deliver exceptional overall efficiency.

Kansas City. The oscillator is the triode portion of a 6U8, with the pentode section as a straight-through amplifier. The crystal operates in a series mode, presenting a high impedance in the cathode circuit at all frequencies except that at which it oscillates. At this frequency the cathode of the tube is effectively grounded for r.f., and the circuit functions as the familiar ultraaudio oscillator.

As the plate coil, L_1 , is tuned near 144.8 Mc. the feedback will cause a rise in grid excitation. This can be observed as a sharp rise on the tuning meter, connected between the test point and ground. A meter with a range of about 3 volts will



Just a convenient handful, but it is a complete r.f. section for a 2-meter transmitter.

Mounting a Beam Antenna on a Telephone Pole

BY THOMAS BRYANT,* WØKLP

• WØKLP describes a simple method of using standard pipe fittings to mount a rotatable array on a wooden pole.

PROBABLY EVERY amateur has visions of owning a beam for his shack. That's the way I felt before I purchased a shiny new Tri-bander last fall. However, I soon found out that there is a lot more to getting the beam up in the air than meets the eye, and there were times when I almost wished that I had never thought of one.

An investigation showed that for moderate heights (30 feet or so, corresponding to an approximate half wavelength on 20 meters) a used telephone pole provides an inexpensive support. I obtained one from the local power company for ten dollars. An added advantage of the pole is that it is nonmetallic and self-supporting.

The problem of a simple mounting for the beam and rotator was solved by WØWIQ, who came up with the idea shown in the sketch of Fig. 1. It is made up entirely of $1\frac{1}{2}$ -inch pipe and standard plumbing fixtures.

Two holes $1\frac{1}{2}$ inches in diameter must be bored in the pole with an expansion bit. These are to accommodate the two short sections of pipe that are used as supports. Care should be used in cutting these holes. The diameter of the pole where the upper hole is drilled should be at least 4 inches — preferably more. Before cutting the hole, the pole should be tightly wrapped with several turns of heavy galvanized wire, both above and below the drilling point. This is to prevent splitting. The expansion bit should be set a shade under the outside diameter of the pipe to provide a drive fit. It is important, too, that the holes run at right angles to the pole. This can be done most easily by lining up two points on opposite sides of the pole and then drilling half-way through the pole from both sides.

The proper position for the lower hole depends primarily upon how long you are going to make the rotating pipe mast. A general rule of thumb is to make the distance between the two pipe supports half the total length of the rotating mast. The lower hole should, of course, be lined up with the upper one as accurately as possible. After the upper pipe support is in place, a length of wire can be attached to it on each side of the pole, these wires to be pulled taut and used as guides in lining up the drilling points for the lower hole.

To provide a mounting for the C-D-R rotators of the popular types TR-2, TR-4 and AR-22, the

* Napoleon, North Dakota.

lower support pipe is fitted with an elbow and a short length of vertical pipe to which the rotator can be clamped. To make sure that the torque of the motor does not unthread the short pipe from the elbow, the latter two should be spot-welded together.

A sleeve bearing is provided at the upper support pipe. A $1\frac{3}{4}$ -inch "T" pipe fitting is used as the bearing. This is fastened to the $1\frac{1}{2}$ -inch support pipe by means of a $1\frac{3}{4}$ -inch to $1\frac{1}{2}$ -inch reducing coupling. (Some plumbing shops may also carry a "reducing T" with the proper reduction between end and side openings so that the reducing coupling will not be necessary.)

The rotating mast that carries the antenna is a section of $1\frac{1}{2}$ -inch pipe. Care must be used in

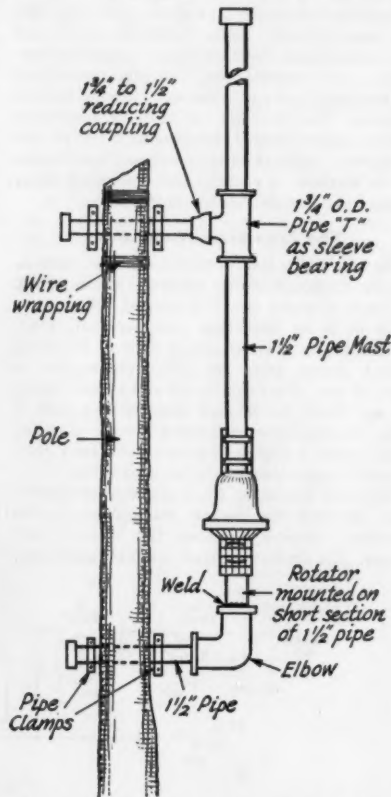


Fig. 1 — A simple method of mounting a beam and rotator on a telephone pole. All fittings are readily obtained at a plumbing shop.

lining up the rotator and the bearing so that there will be no binding at the bearing. The pipe supports must be driven out far enough from the pole so that the rotating part of the rotator clears the pole. If the rotator is of the type whose mounting clamps are offset from the mast clamps, it will be necessary to drive either the top or the bottom support pipe out farther from the pole to compensate for the offset.

After the mast has been lined up, pairs of pipe clamps or U bolts can be used on both sides of the pole to keep the supporting pipes in place. It is a good idea to fit the supporting pipes and the top of the rotating mast with threaded caps to keep water and dirt out of the pipes.

The sleeve bearing should be packed with grease to provide lubrication. One way that this can be done is to force the grease in through the upper supporting pipe with a wood dowel.

Personally, I feel that this way of mounting a beam and rotator is easier, requires less use of profanity, and is perhaps less expensive than most other ways. It is now in use in two stations here in Napoleon and has been 100 per cent successful. It has withstood high winds, snowstorms, sleet, rain — everything, with no damage to the rotator or beam. The beams in use weigh over 50 lbs. and that's a pretty big structure. I hope that others trying this method of mounting will have the same satisfaction that I've had.



This beam support at W0W1Q makes a clean looking installation.

In last month's SS results one of our better contest operators commented on the business of sending words twice even when given an RS57 report. Sound logical? Then read over the following, quoted from an IRE news release. "The problem of sending coded messages as speedily as possible and yet with the least chance of error was discussed in a session on Information Theory. . . . The problem is analogous to trying to get a message across in a noisy room. Their investigation revealed that it is best for the sender to repeat the message twice without being asked rather than for the receiver to ask the sender to repeat the parts of the message he cannot under-

stand, because a request for clearer information might also be misunderstood, resulting in greater confusion, and a waste of time and energy."

- - - -

The Samuel Gompers Vocational and Technical High School, 455 Southern Boulevard, The Bronx, is one of the public high schools in New York City, and offers a comprehensive curriculum in electronics. The principal, assistant principal, chairman of the Radio-TV department, and teachers are all hams. Anyone interested in the school's work or in gaining admission is cordially invited to visit it.

»

Through the initial efforts of W8HSG and the generosity of W8FX, the Michigan Historical Commission in Lansing has established a permanent display of amateur equipment in the State Historical Museum. Other amateurs have since added to the original donation, so that it tells a rather complete story of amateur radio between 1912 and 1925. The director of the Museum, Dr. Eugene T. Petersen, would be interested in obtaining more radio gear of that era. In the photo at the right are shown W8AHV, W8PLP and W8OC looking over the attractive display. (Photo courtesy *The State Journal*)



New Life for CODAN

A Modernized Receiver Squelch Circuit

BY ROBERT G. THOMAS,* W3QZO

THE Philadelphia mobile calling frequency of 29.493 Mc. is monitored nearly twenty-four hours a day as one phase in the activities of the Phil-Mont Mobile Radio Club. For this service, most stations employ broad-band crystal-controlled receivers and, in many instances, remote operating positions in various parts of the house. Mobile calls can thus be answered immediately, regardless of what part of his home the fixed-station operator happens to be in at the time. These remote positions generally consist of a loud-speaker with attenuating pad, transmit-receive switch, and a microphone. They may be located in such places as the workshop, garage, dining area, and living room. One of the fellows has gone so far as to install a remote position at

• Codan is a useful operating adjunct to any fixed-tuned or communications receiver. In this article the author describes a simple and effective circuit that can be used in new gear or installed in existing equipment in place of the first audio stage. (In case you have forgotten, or never knew, "Codan" is the code designation for "carrier-operated device, anti-noise").

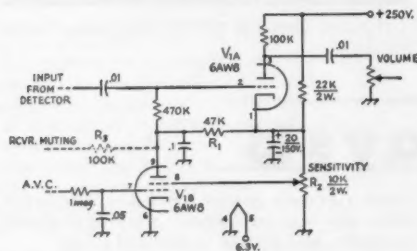


Fig. 1—Schematic diagram of the Codan receiver squelch. Capacitances are in μf . The volume control shown at the upper right is the volume control ahead of the normal receiver output tube.

If desired, the receiver can be muted during transmit periods by grounding the left-hand side of R_3 .

his back porch so he can "yak" and water the petunias at the same time!

Needless to say, the little woman would never tolerate remote rig controls scattered throughout her happy home if they all issued a monotonous stream of background noise. Most of them will reluctantly admit, however, that they like the normal chatter on the "party line" calling channel that we use, and only object to the intersignal noise. Even in cases where net receivers are operated normally (with a single speaker located right at the receiver) background noise soon promotes a "tin ear" and a tendency to turn the audio gain down, with the possibility of missing weak signals from calling stations.

The obvious solution is to incorporate a squelch system in the receiver, to eliminate audio output whenever signals are not being received. A variety of methods for accomplishing this are in use locally, including simple amplifier/relay combinations, a popular combined limiter and squelch,

and the Codan circuit.¹ After reviewing each circuit and testing them under actual operating conditions for several weeks, it was concluded that the Codan arrangement offered considerable advantage over the others in performance, cost and space requirements. In addition, several improvements are possible that greatly enhance the attractiveness of the Codan squelch for fixed station use.

Operation of the circuit can be easily understood by referring to the schematic diagram, Fig. 1. V_{IB} operates as an electronic switch to turn an audio amplifier, V_{IA} , on and off. When signals are not being received, a.v.c. potential is near zero and V_{IB} conducts, drawing its plate current through the 47K plate load resistor, R_1 . The voltage drop across R_1 is sufficient to cut off V_{IA} , preventing unwanted background noise from reaching the audio output stage. When a signal is received, negative a.v.c. voltage developed by the detector cuts off V_{IB} , and plate current no longer flows through R_1 . V_{IA} will then conduct and amplify the detector audio output. The precise level at which the squelch opens is determined by the setting of the sensitivity control.

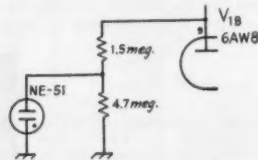


Fig. 2—An optional addition to the squelch circuit that will furnish visual indication when a signal is received.

R_2 , a 10K potentiometer in the screen circuit of V_{1B} . At one extreme in the setting of R_2 , the screen voltage is quite high, necessitating a rather strong signal to develop sufficient a.v.c. to cut off V_{1B} and open the squelch. The other extreme exists with the screen grounded through the

¹ Ives, "Codan Elimination of Intersignal Noise," *QST*, October, 1952.

potentiometer, which cuts off V_{1B} and opens the squelch continuously, regardless of the absence of an incoming signal. Optimum setting is a point between these two extremes such that the squelch does not quite open on random low-level a.v.c. fluctuations resulting from noise rectification while no signals are being received. With this adjustment, a signal one S unit above the noise will open the squelch and permit normal reception.

Recent advances in tube design have made available the 6AW-A, a miniature dual section type which will replace both the 6J5 and 6SJ7 used in the original circuit. The triode section of the 6AW-A has a high amplification factor and, as used here, provides an audio gain in excess of 50. This is more than enough amplification to drive the output stage with the low amplitude signal developed by the detector. The pentode section has the sharpest cut-off characteristic of any pentode available, and is therefore well suited for service here, where it must be turned on and off by small changes in a.v.c. generated by weak signals. Of course, the space occupied by a single 6AW-A is significantly less than that required by its two octal counterparts, resulting in an important advantage when compactness is a consideration.

The squelch circuit at W3QZO is built into a crystal-controlled monitor receiver. However, several possibilities exist for adding the squelch to an existing commercial receiver if desired. The simplest means is to construct the circuit in a small aluminum utility box that can be mounted on the back of the receiver or housed within the cabinet. Most receivers incorporate an accessory socket, and a compact plug-in squelch unit would be easy to add, especially since many accessory sockets already have a.v.c. and audio connections for n.f.m. adaptors. In areas where the noise level varies over wide limits during the day, readjustment of the sensitivity control will occasionally be necessary so that the squelch will react properly to weak signals but still prevent noise from breaking through. In such cases it is advisable to mount the sensitivity control where it is accessible. Of course, this is not a problem when the Codan is incorporated in a new equipment design. When the squelch is added to an existing commercial receiver, the sensitivity control may be accommodated on the front panel without drilling additional holes merely by converting an existing control to a dual concentric type that handles its original function in addition to squelch sensitivity. As an alternative, the sensitivity control can be mounted out of the way and set up so the maximum noise encountered will not open the squelch. The squelch will react normally to strong signals, and a conveniently located switch may be used to open the pentode cathode return and disable the squelch when it is desired to receive weak signals without disturbing the preset sensitivity adjustment. The latter procedure is most applicable in CD equipment where inexperienced operators might otherwise misadjust a variable control.

No special precautions need be taken in the construction of the Codan circuit other than avoiding excessive lead length and high temperature locations. It is preferable to use a high quality two-watt composition potentiometer for the sensitivity control, but if cost is an important factor, a wire-wound unit can be employed with a minor sacrifice in smoothness of operation. While the sensitivity control has sufficient range for nearly all cases, some receivers have such a high internal noise level on the higher frequency bands that they develop appreciable a.v.c. voltage even when not tuned to a signal. Because of this, it may not be possible for the squelch to cut off and eliminate noise in the output. The receiver limitation can be accommodated in the squelch circuit by putting a resistor of about 2K to 10K in the ground return of the sensitivity control, thus raising the screen voltage and requiring higher values of a.v.c. to open the squelch. The squelch will then function properly, but the fundamental problem of an inherently noisy receiver will still exist. Although the Codan circuit eliminates receiver noise and moderate amounts of impulse noise during intervals when signals are not being received, it is not intended to suppress impulse noise, and hence it must be supplemented by a conventional noise limiter at locations where interference of this type is bothersome.

One other point dealing with installation should be noted: Be sure that the a.v.c. voltage used to actuate the squelch not the delayed type, because if a.v.c. is used, the squelch will not operate properly on weak signals.

An effective means of muting the receiver during transmitting periods can be had by adding a 100K resistor, R_3 , at the plate of the pentode, as shown in Fig. 1. The free end of the resistor is grounded through auxiliary contacts on the change-over relay, causing the triode section to cut off when transmitting. This completely silences the receiver with none of the contact arcing and thumps from the loudspeaker that generally accompany the method where receiver plate voltage is switched off.

Although not actually incorporated in the author's receiver, the novel visual signal indicator shown in Fig. 2 may be of interest to others. The NE-51 glow lamp conducts whenever a signal is being received, and is extinguished during no-signal conditions. The 6AW-A pentode plate voltage is used to provide an appropriate potential to the indicator dividing network. A visual indication of this type will help avoid missing a calling station if the volume control is unknowingly turned down, or if room noise is high.

Several of the local gang have used the modified Codan squelch described here with excellent results in various types of receivers. The small effort expended in its construction is more than repaid by a new operating convenience and the elimination of listening fatigue caused by incessant background noise.

A 500-Watt Audio System

4X250Bs Operating Class AB₁

BY IRWIN R. WOLFE,* W6HHN

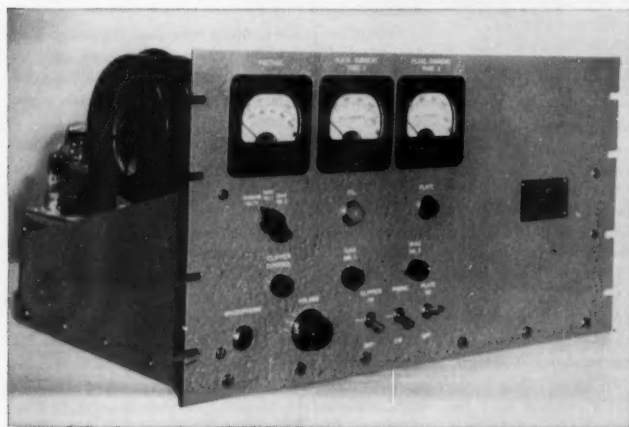
Not too long ago, I worked at a broadcasting station. The 500-watt transmitter there used a pair of WE-212D tubes in the final, modulated by four 212D tubes in parallel. For the benefit of the younger generation, a 212D is a triode just a bit larger than a two-quart wine bottle. It is rated for 250 watts of plate dissipation. In those days, there was only one kind of modulator—Class A—simple and inefficient.

Dissatisfaction often breeds progress. Some fellows wanted more than just 25 per cent efficiency. So Class B modulation was born during the early depression days. This doubled the efficiency. Part of the hot air surrounding the modulator tubes was now converted to speech, and the disgruntled were now content for the time being. Of course, there were the requirements of low-plate-resistance driver tubes, a rather special input transformer, and a low-impedance bias supply. But that was a small

• A 500-watt Class B modulator with its rigid requirements as to driver-voltage and bias regulation can constitute a formidable undertaking. Such problems are eliminated in this AB₁ amplifier. The driving requirement of a peak grid-to-grid voltage of only 100 at zero current is easily furnished by a miniature tube through an ordinary voltage-amplifier transformer.

The article includes complete information on power supplies and control circuits.

cry from the 25 per cent of the good (?) old days. As to compactness, the 4X250B is actually smaller than some Class B driver tubes. And, brother, a pair can really take it!



A 500-watt Class AB₁ modulator. From left to right at the top of the panel are the dual-range voltmeter and the two plate milliammeters. Immediately below are S_2 , I_2 and I_1 . In the next row below are controls for R_1 , R_7 and R_5 . Along the bottom are J_1 , the gain control, S_2 , S_4 and S_1 .

price to pay for the increased efficiency.

Since the advent of high-power tetrodes, one need not go to Class B triodes to modulate a big final at high level. Tetrodes operating Class AB₁ will do the trick nicely with good efficiency. Since AB₁ operation is at zero grid current, no special input transformer or driver tubes are necessary. Any old bias supply you have around will handle the modulator grids.

The modulator unit described here comprises a complete audio system. It is built around a pair of 4X250B tetrodes that will deliver 500 watts of audio power as Class AB₁ modulators with a maximum input of 828 watts (1800 volts at 460 ma.). This efficiency of about 60 per cent is a far

Audio Circuits

The modulator circuit is shown in Fig. 1. The tube line-up starts with a 12AX7 high- μ dual triode in a two-stage resistance-coupled microphone preamplifier. The microphone connector J_1 is the three-terminal type that provides for push-to-talk power control. The gain control is in the grid circuit of the second stage. A pair of terminals is also provided for feeding a 500-ohm line to the unby-passed cathode of this stage.

The preamplifier output goes either to a 6AL5 clipper stage, or directly to the driver grid through a 3-kc. low-pass splatter filter. The selection is made by the d.p.d.t. toggle switch S_2 . The clipping level is set by R_1 .

One section of a 12AU7 is used as the modu-

* 3467 Rambow Drive, Palo Alto, Calif.

SPEECH AMPLIFIER

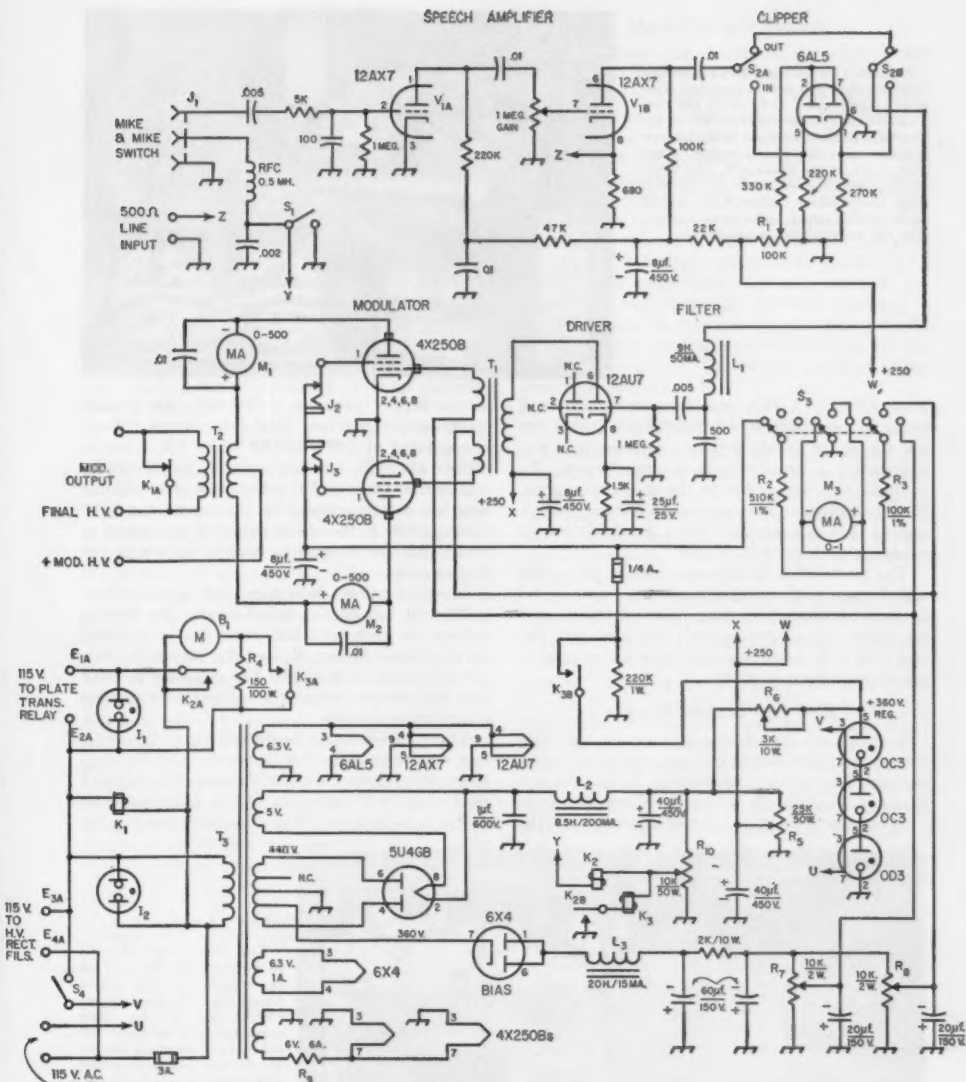


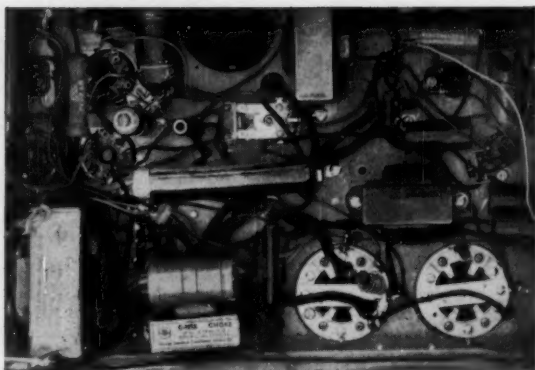
Fig. 1 — Circuit of the 4X250B modulator. All capacitances less than 0.001 μ f. are in μ mf. All capacitors marked with polarity are electrolytic. All other capacitors may be ceramic, mica or paper. All resistors are $\frac{1}{2}$ watt unless otherwise specified. Similarly-lettered wires should be connected together. Relay armatures are in unenergized position.

Both sides of J_2 and J_3 carry screen voltage. They should have an insulated mounting and should be inaccessible to accidental contact. Meter plug should be well insulated and used with due caution.

- B₁ — Ventilating blower (Dayton IC180).
- I₁ — $\frac{5}{8}$ -inch neon panel lamp, built-in 100K resistor, NE51 bulb, amber lens (Johnson 147-1144-4).
- I₂ — Same as I₁, red lens (Johnson 147-1144-2).
- J₁ — 3-contact push-to-talk microphone connector (Amphenol 80-PC2F or similar).
- J₂, J₃ — Closed-circuit jack.
- K₁ — Single-pole, normally-closed 115-volt a.c. relay, antenna change-over type (Advance AT/2C/115VA or similar).
- K₂, K₃ — 2-pole normally-open 110-volt d.c. relay (Advance AM/2C/110VD or similar).
- L₁ — 9-h. 50-ma. filter choke (Stancor C-1215).
- L₂ — 8.5-h. 200-ma. filter choke (Stancor C-1721).
- L₃ — 20-h. 15-ma. filter choke (Stancor C-1515).
- M₁, M₂ — 0-500-ma. d.c. milliammeter (3½-inch rectangular).

- M₃ — 0-1-ma. d.c. milliammeter (3½-inch rectangular).
- S₁ — S.p.s.t. toggle switch.
- S₂ — D.p.d.t. toggle switch.
- S₃ — Single-wafer 3-pole 3-position rotary switch, non-shorting (Centralab 2507 or 1407).
- S₄ — S.p.s.t. 15-amp. toggle switch.
- T₁ — Multipurpose inter-stage transformer, ratio 1:3 (total secondary), step up, split secondary (Stancor A-4774).
- T₂ — 600-watt multitap modulation transformer (UTC CVM-5).
- T₃ — Power transformer: 880, 720 volts c.t., 200 ma.; 6.3 volts, 8 amp.; 6.3 volts 1 amp.; 6.3 volts, 3 amp.; 5 volts, 3 amp. (Triad R-26A).
- R₁ — 2-watt potentiometer (Ohmite CU1041).
- R₂, R₃, R₁₀ — With adjustable slider.
- R₇, R₈ — Wire-wound potentiometer.
- R₉ — See text.

Bottom view of the 500-watt modulator through the access opening. The driver transformer T_1 is above the two 4X250B air-system sockets. Audio filter choke L_1 is to the right of the blower exhaust opening. Power-supply filter chokes are at the lower left. The large resistor near the center is R_4 and the relay above is K_3 . Relay K_2 is out of sight in the upper right-hand corner, near the microphone connector J_1 .



lator driver. (A 6C4 would serve equally well here, but we thought we might have future use for the spare triode section, perhaps in a.v.c. application.) An inexpensive transformer, T_1 , couples the driver plate to the modulator grids. This transformer has separate secondary windings so that independent bias adjustment can be made for each modulator grid.

The modulation transformer used is the multi-match type so that adjustment can be made for proper modulator loading. The primary and secondary windings are each rated at 500 ma. and that adds up to plenty of iron and copper—about sixty pounds of it!

Bias and Screen Supply

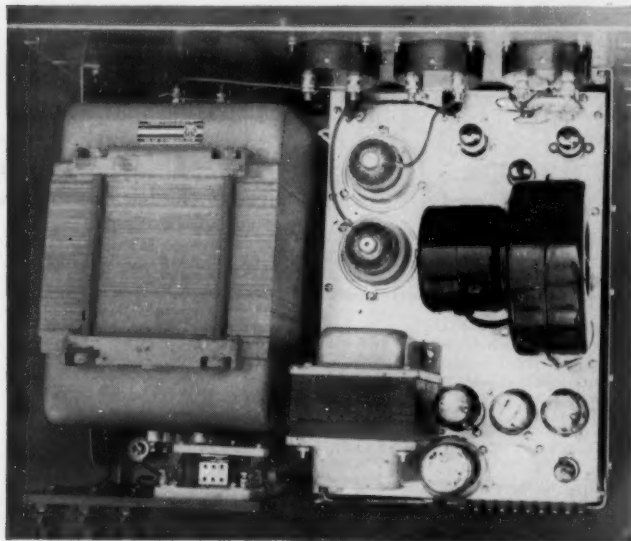
Included on the chassis is a power unit that supplies adjustable grid bias and regulated screen voltage. The power transformer T_3 has enough filament windings to take care of requirements.

A voltage divider, R_5 , across the output of the

screen supply provides a 250-volt tap for the speech-amplifier tubes. Modulator screen voltage is regulated at 360 volts by three VR tubes in series. The VR limiting resistor R_4 should be adjusted so that the VR tubes draw about 40 ma. with no screen current to the modulator. The $\frac{1}{4}$ -amp. fuse in the screen circuit is important in protecting the screens in case of failure of the plate supply.

The 6X4 half-wave bias rectifier operates from a 360-volt tap on the transformer. The biasing voltage for each modulator tube can be adjusted by a potentiometer (R_7 and R_8) across the output of the bias rectifier. The filtering in both bias and screen supplies is adequate to remove every trace of ripple.

The 4X250B has a heater rating of 6.0 volts. For maximum tube life it is advisable to drop the voltage from the transformer to this value. I used a series resistor, R_9 , of $\frac{1}{20}$ ohm made by coiling a 5-inch length of No. 16 Manganin (or



Top view of the 4X250B modulator. At the rear of the chassis are the power transformer T_3 , the two rectifiers, one of the filter capacitors and the three VR tubes. In front of the blower are the two speech-amplifier tubes and the 6AL5 clipper. The panel to the rear of the modulation transformer carries the modulator-output and high-voltage connectors and the shorting relay K_1 .

Advance) resistance wire. The voltage should be checked at the tube socket, since your line voltage may be low and the series resistor not needed.

Metering

Separate milliammeters are installed in the plate leads of the two modulator tubes so that the individual plate currents can be monitored.¹ Jacks J_2 and J_3 are provided for plugging in a milliammeter to check the screen current to each tube.

M_3 with series resistors R_2 and R_3 form a dual-range voltmeter for checking screen and biasing voltages. With S_3 in the first position (full counter-clockwise) the full-scale meter reading is 500 volts for checking screen voltage. With S_3 in either the second or third positions, the full-scale reading is reduced to 100 volts for checking biasing voltages.

Ventilation

The external anodes of the 4X250Bs require a draft of about 7 c.f.m. to keep them healthy. This is provided by a low-speed low-noise low-priced squirrel-cage-type blower B_1 . This blower supplies more than adequate ventilation for the tubes, but it is a good idea to have a margin to take care of the additional dissipation of the speech tubes, transformers and the several resistors.

It was not without some qualms that the blower was mounted on the same chassis as the preamplifier. As a precaution, the 12AX7 was shock-mounted with small rubber grommets to minimize vibration from the blower motor. Apparently, my fears were ungrounded (although the blower motor was), since any noise that may be picked up is submerged in the microphone noise level. Blower noise is eliminated under stand-by conditions by inserting R_4 in series with the motor to reduce its speed.

¹ If the meters are the metal-case type, they should be recess-mounted as a safety measure.

High-Voltage Supply

Fig. 2 shows the circuit of the high-voltage supply used with the modulator. It is conventional with a single-section choke-input filter. Output voltage is read on M_4 . Terminals E_1 through E_4 are connected to similarly-numbered terminals on the modulator unit.

The plate transformer (T_4) used in this supply has a dual primary. It can be operated from a 230-volt line by connecting the primary windings in series as shown, or from a 115-volt line with the primary windings connected in parallel. With the 230-volt connection, reduced power is obtained by switching the 230-volt primary to 115-volt input, as shown in Fig. 2. With 115-volt primary input, the same reduction can be obtained by switching the primary windings to the series connection.

Control Circuits

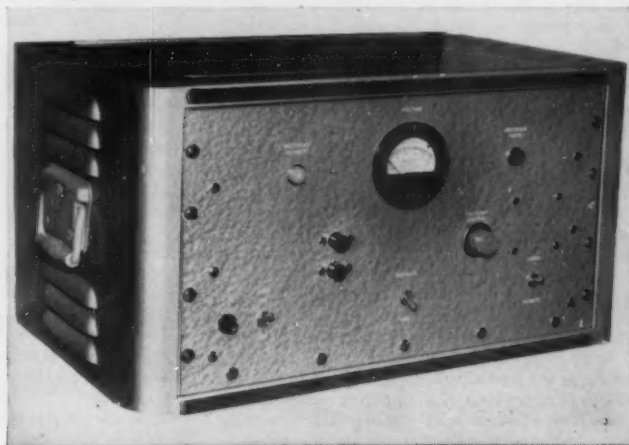
I suspect that a glance at the diagrams will convince the reader that I own huge amounts of stock in a few relay-manufacturing concerns, and how I wish you were right. Nevertheless, a good control system is a wise investment when anyone contemplates the installation of a high-power phone transmitter.

S_4 is the main control switch for the audio unit. I have labeled this switch PHONE/C.W. because it not only turns on T_2 and T_5 (through terminals E_3 and E_4) to ready the modulator and its power supplies for phone operation, but it also actuates K_1 which removes the short (K_{1A}) across the modulation-transformer secondary. This short is necessary, of course, for c.w. operation. The closing of S_4 is indicated by the lighting of I_2 .

S_1 is in parallel with the microphone push-to-talk switch, and either switch may be used to actuate K_2 . Contacts K_{2A} supply a.c. to the plate-transformer relay K_4 (in the power-supply unit), simultaneously turning on I_1 . Contacts K_{2B} actuate K_3 .

Contacts K_{3A} short out R_4 , bringing the blower speed up to normal. Contacts K_{3B} apply screen

The enclosure for the high-voltage supply matches the one for the modulator. I_4 is to the left of the voltmeter, and I_3 to the right. Below are the two push-button switches S_5 and S_6 , and the control for R_{11} . Near the bottom of the panel, S_8 is at the center, S_7 is to the left and S_7 to the right.



of the chassis, can escape only through the air-system sockets (Eimac SK-610) in which the 4X250Bs are mounted. If a cabinet is used, a 3-inch hole should be cut in the top cover in the area directly above the tubes. This hole can be covered with perforated metal.

A.c. connections are made at a terminal strip mounted on the rear edge of the chassis.

Behind the modulation transformer, a $7\frac{3}{8} \times 9\frac{3}{4}$ -inch panel of $\frac{1}{4}$ -inch phenolic material is fastened to the angle-iron frame. This panel carries three Millen high-voltage connectors type 37001. Two of these are the modulator output terminals; the third is the modulator high-voltage input connector. This panel also carries the shorting relay K_1 . The metering jacks J_2 and J_3 are mounted on an insulating panel at the rear of the chassis. These jacks should be mounted in such a manner as to make accidental contact impossible. Also, the meter should never be plugged in unless the power supply has been turned off.

The high-voltage power-supply chassis is of similar dimensions and constructed in the same manner.

Operation

As mentioned earlier, R_5 should be adjusted so that the VR tubes draw 40 ma. with K_{2B} open. The 4X250B is rated for a maximum screen dissipation of 12 watts. Therefore, when the screen voltage is 360, the maximum screen current should not exceed 33 ma. for each tube. However, it has been determined experimentally that there is no increase in undistorted output or efficiency at screen currents above 15 ma. per tube at a screen voltage of 360 (5 watts). A total screen current of 30 ma. (for both tubes) was

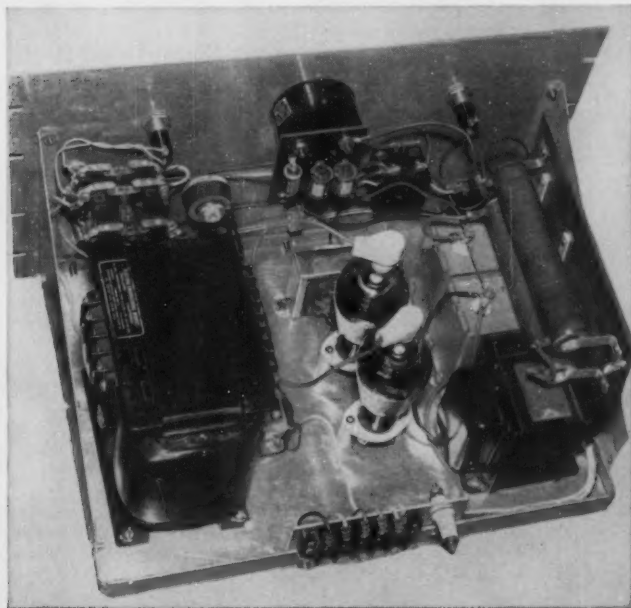
found to give optimum operation. When the allowable modulator input is exceeded, the screen current will rise above this value and the VR regulators will lose control. The screen voltmeter can therefore be used as an indicator of excessive screen current. The audio gain control should be adjusted to just below the point where the voltmeter begins kicking downward as you modulate.

The preamplifier has sufficient gain to operate from any of the low-level crystal or dynamic microphones. The over-all frequency response is rather good without the low-pass filter (clipper switched out). However, the filter reduces the effective band width to 3 kc. at 6 db. down. The modulator output was measured quite carefully. At a plate voltage of 1900 and a peak signal current of 470 ma., 542 watts of audio power was measured. A monitoring oscilloscope showed no visible distortion of a sine wave at the input.

The unit has been in operation for several months and has performed well. There is no appreciable heat rise in any of the components after many hours of testing and operation. The modulator has been used to plate modulate 100 per cent a pair of 4-400As running at a brimming kilowatt input. The audio quality reports have been very complimentary. Most of the time the clipper and filter are in the circuit, and the signal still sounds good.

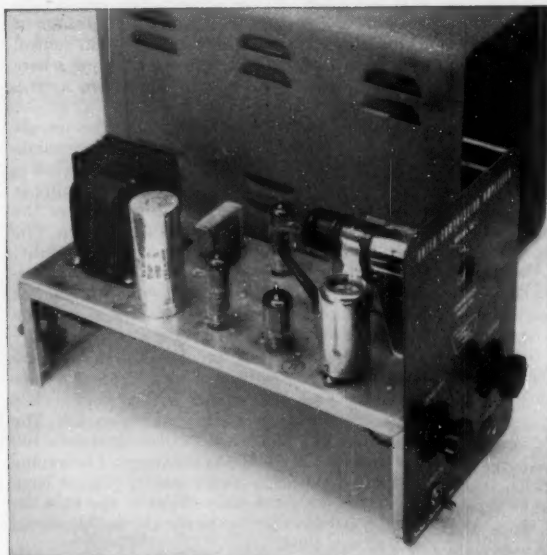
Overloading is carefully avoided by watching the screen voltmeter for any sign of screen overload. The clipper adjustment can be set to minimize overdrive.

The other day I was thinking of that old four-tube 500-watt modulator at the b.c. station and it suddenly occurred to me that the Heising modulation choke we used there was almost twice as big as this modulator!



High-voltage plate supply for the 500-watt modulator. K_4 and R_{11} are between the high-voltage transformer and the panel. The voltmeter multiplier resistors are mounted on an insulating panel suspended from the meter terminals. S_4 and S_5 are to the right of this panel. The bleeder resistors are fastened to an insulating panel at the right, above the filter choke and capacitors.

• Recent Equipment —



Cabinet dimensions of the Model GC-1 Gated Compression Amplifier are 6 inches wide, 9 inches high, and 14 inches deep. An audio amplifier with automatic gain control and integral power supply, the unit can be used with any receiver without making any internal connections.

Model GC-1 Gated Compression Amplifier

THE GC-1, a Central Electronics product, is an audio amplifier with automatic gain control, its rated control characteristic being such that the output level will be held constant within 3 db. for input-signal variations of the order of 40 db. The control threshold is 0.1 volt at maximum sensitivity. The final output tube, a 6AQ5, delivers sufficient power for loud-speaker operation through the output transformer incorporated in the unit. Power supply is also included.

In the amateur field, the principal application of the GC-1 is to hold the audio output of a re-

ceiver essentially constant despite the widely varying levels of received single-side-band signals. (Only a few of the current receivers have conventional-type a.v.c. systems that are suitable for this purpose.) No modification of the receiver is required; the input terminals of the GC-1 connect to the speaker output terminals of the receiver and the speaker voice coil terminals connect to the output of the GC-1. A control is provided for setting the speaker output at the desired level. A 6E5 tube is included to give a visible indication of compression.

An accelerated form of gain control is achieved through the use of a variable threshold or "gate." The circuit is shown in Fig. 1. A suitable amount of audio voltage from the output stage is taken from a special winding on the output transformer through the voltage divider R_1 and applied to the compression rectifier, which in the GC-1 is one section of a 12AX7 with the

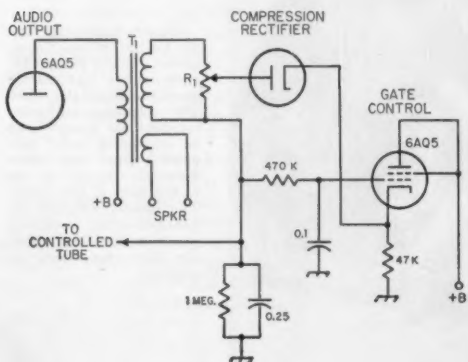


Fig. 1 — Compression circuit used in the Model GC-1. The a.v.c. voltage is applied to the Nos. 1 and 2 grids of a 7B8 (Not shown in this diagram).

grid and plate tied together (the other section is used as the audio voltage amplifier). The rectifier cathode is given a positive bias by the voltage drop across the 47K resistor in the cathode circuit of the 6AQ5 "gate-control" tube, and thus there is no conduction through the rectifier until the audio voltage exceeds the bias. When this occurs, the rectified current develops a negative voltage with respect to chassis across the 1-megohm resistor. This voltage is applied to the control tube, a 7B8, to reduce its gain, and also is applied through the 470K-0.1 RC network to the grid of the 6AQ5. The negative bias on the 6AQ5 reduces its plate current and thus reduces the drop across the 47K cathode resistor. As a result the compres-

sion rectifier begins conducting at a lower audio voltage, the over-all effect being to amplify the control action so that the gain of the 7B8 is reduced very rapidly when the signal level rises above the threshold. The a.v.c. time constant is set by the 1-megohm resistor and 0.25- μ f. capacitor, while the RC network in the grid circuit of the gate-control tube determines the rate at which the variable gate goes into action.

The GC-1 no doubt could be used as a compression amplifier in a regular transmitter speech-amplifier chain. Enough preamplification should be provided to bring the microphone level up to a volt or two for operating the a.v.c. system.

— G. G.

The Cesco Standing-Wave Reflectometer

THE Cesco Standing-Wave Reflectometer Model CM-52 is designed to measure standing-wave ratios in 52-ohm coaxial cable. It is the type of s.w.r. indicator that can be permanently installed in the transmission line, since it will handle power inputs up to 1000 watts. The frequency range over which the meter can be used is 3 to 200 Mc. A 0-100 microammeter calibrated directly in s.w.r. is used as an indicator.

The Cesco reflectometer operates on the same principles as the Monimatch — i.e., a bridge using mutual inductance and capacitive coupling between linear conductors.¹ A 5-inch length of aluminum tubing is used as the outer conductor and a 1/4-inch diameter tube as the inner conductor of a coaxial line. The two linear inductors

of the bridge, along with the terminating resistors, are enclosed in the aluminum tubing.

A normally-open push-button switch is used to shift from reflected-power to forward-power readings. To read standing-wave ratio the switch first is closed and a potentiometer is adjusted to set the indicator reading to full scale. Then when the switch is released the s.w.r. can be read directly on the meter. If it is desired to use the meter as an output indicator the switch can be held closed by a plastic cap nut.

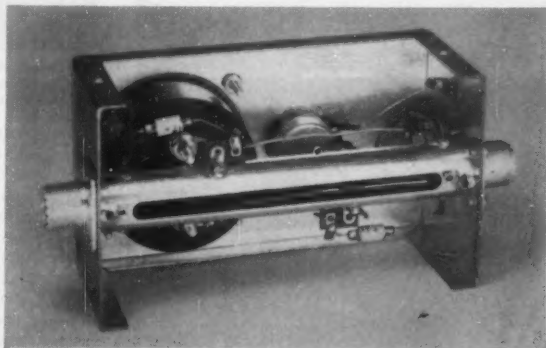
The complete reflectometer is housed in a gray Hammertone box which measures 5 inches long, 3 inches wide, and 2 1/2 inches deep. As shown in the photograph, the coaxial line assembly runs the length of the box between the two coax fittings. The pick-up wire is just visible through the slot in the outer conductor. A cover plate is used to close the slot in normal operation.

— L. G. M.

¹ Norgorden, "A Reflector for the H.F. Band," *NRL Report 3533*.

McCoy, "Monimatch Mark II," *QST*, Feb., 1957.

A rear view of the Model CM-52 with the cover removed. The 0-100 microammeter and the potentiometer for setting the indicator to full scale are mounted on the front of the box. The unit is normally mounted vertically, with the meter at the top.



Strays

K9EFH suggests that those who are operating break-in will be interested in the Biblical reference Isaiah 65: 24.

Quite by chance, K2KEW mobile on 2 meters worked K2TSP mobile on 6 meters. It turned out that K2TSP was directly in front of K2KEW.

A "Wonder" on 20 Meters

Loaded Dipole with Fanned Conductors

BY RALPH ROSENBAUM,* W5ECP

• Impressed with the compactness and simplicity of the 10-meter "Wonder-Bar" antenna described by K6OFM in an earlier issue, W5ECP has extended the principle to the 20-meter band with convincing results.

IT WAS IN THE WEE HOURS of a cold December night that an excited call from W5KF aroused my interest. "Say, Ralph, what would be the results if we cut K6OFM's 'Wonder-Bar'¹ for twenty meters?"

Thus one Saturday afternoon the antenna was raised. So well did the "Wonder-Bar" perform with 12 watts input that this article was written.

The "Wonder-Bar" is a simple center-loaded dipole with fanned conductors. Two advantages are noted. The first is that the fanning of the conductors produces a broad band width; the second is that the antenna, as used by K6OFM, is one half the length of a standard dipole. A week end and only fifteen dollars will make the antenna, complete with coax and mast.

Construction

For each bow, two 8-foot lengths of $\frac{3}{4}$ -inch lightweight aluminum tubing were used as radials. Electrical conduit or thin-wall steel tubing may be substituted. It was felt that tubing smaller

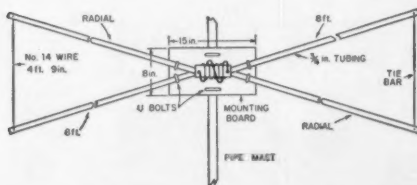


Fig. 1 — Sketch showing the dimensions of the "Wonder-Bar" antenna for 20 meters.

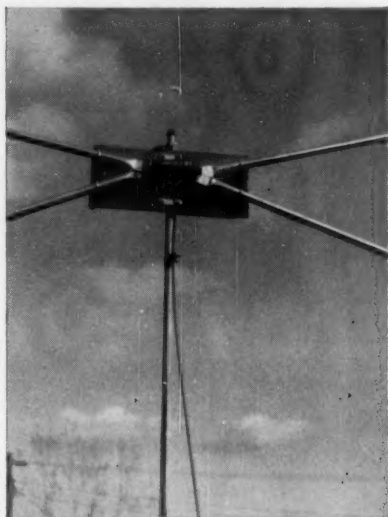
than $\frac{3}{4}$ inch in diameter would bend near the tie bar under wind stresses. The larger-diameter tubing should also improve the antenna bandwidth characteristics.

After the tubing or conduit is cut to 8-foot lengths, one end of each piece is flattened in a vise for a length of 2 inches. One half inch from the opposite end a hole is drilled for an 8-32 machine screw. A heavy solder lug is then bolted to the rod through the hole.

* 530 Lafayette Place, N.E., Albuquerque, New Mexico.

¹ Bishop, "The 'Wonder-Bar' Antenna," *QST*, Nov., 1956.

A varnished board, $\frac{1}{2}$ by 8 by 15 inches, is used as the center support. Two radials, which make up one bow, are placed on the board so that the flattened ends of the radials overlap each other. The place of overlapping is located on the midline of the board 5 inches from the end. The free ends of the radials are spread so that the ends are five feet apart. Holes for U clamps are drilled close to the end of the board.



The radials of the 20-meter "Wonder-Bar" are clamped to the mounting board by means of U bolts. The loading coil and coupling link are at the center.

A hole is drilled through the center of the two overlapping ends and continued through the board. A $3\frac{1}{2}$ -inch bolt is passed through the wood first, and then through the rods, clamping the end of the bow securely to the board. A lock washer is used under the nut, and a large flat washer under the bolt head, next to the wooden surface. Tighten the bolt firmly to assure good electrical contact between the two radials. The remaining length of the bolt is left so that a coil form can be mounted. The same method is used for the construction of the other bow. If high power is used, it is suggested that six stand-off insulators be used in place of the four U bolts and two long bolts.

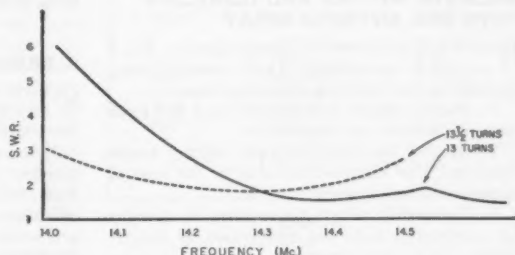
To economize, No. 14 wire, 4 feet 9 inches long, is soldered between the already-mounted solder lugs. Tension produced by the lack of 3 inches of No. 14 wire adds rigidity.

Loading Coil

A 5-inch spacing between bows was left for the coil mounting. Thirty turns of No. 12 plastic-covered wire are close-wound on a $1\frac{1}{4}$ -inch-diameter Lucite form, 6 inches in length. A hole is drilled at each end of the winding, and a 1-inch stand-off insulator is bolted to the form at each end. The coupling coil consists of 5 turns of No.

experimental antenna at 14.15 Mc. The other 17 turns are shorted. Fewer turns could probably be used on the main winding, say 15 to 20, and still allow ample latitude for adjustment. S.w.r. measurements show that the number of turns is quite critical, so trial and error will have to determine the position of the tap on the coil. The antenna was raised 25 feet off the ground.

Fig. 2—S.w.r. measurements showing the importance of adjusting the number of turns in the loading coil.



12 wire wound on a 2-inch diameter and centered over the loading coil. This coil is fastened to the stand-offs, along with the 52-ohm coaxial feed line (RG-8/U or RG-58/U). The ends of the form are drilled so that the extensions of the bolts which clamp the intersection of the radials will pass through the ends. The Lucite form, together with the ends of the 30-turn coil, are then fastened in place with an additional pair of nuts. The resulting antenna cost four dollars!

Any convenient technique may be used for mounting the antenna. If a pipe is used as a mast, the board may be simply clamped to the pipe with U bolts. You can give the antenna a paint or lacquer finish.

Only $13\frac{1}{2}$ turns were needed to resonate the

Performance

The antenna has performed excellently both on c.w. and phone. Because of its lightness, good performance, size, and ability to be rotated and quickly disassembled, the antenna should be excellent for Field Day and contest work.

The "Wonder-Bar" is bidirectional, and to work a desired area, the radials should be broadside to that direction. If a rotator is used, it is necessary to rotate the antenna only 180 degrees.

It was found that with 30 turns in the loading coil, the antenna resonated at 9 Mc. With additional turns, the antenna might be put on 40 meters. It is also suggested that a beam could be made out of two "Wonder-Bars" for 20 meters.

Strays

»

We've all heard about the California kilowatts, cool and otherwise, but here's the East-coast version of same. The center of attraction in this photo is an RCA tube weighing 150 pounds and which uses a plate voltage of some 18,000. An Army transmitter using these tubes with s.s.b. and a beam antenna in the 4-30 Mc. region will have an effective power of 24,000,000 watts. The Navy will also use some at a high-power station in Maine. The inspection party here includes, left to right, W1DF, W2YM (RCA), W1DX, W1HDQ, and K2FF (RCA).

»





Hints and Kinks

For the Experimenter



RECEIVER MUTING AND DISABLING WITH THE ANTENNA RELAY

THE simple send-receive circuit shown in Fig. 1 permits a conventional d.p.s.t. antenna relay to perform the following three functions:

- 1) Switch a single-wire antenna back and forth between receiver and transmitter.
- 2) Ground the receiver input during transmissions. This may be desirable in the case of high-power installations.
- 3) Completely silence the receiver by opening the center-tap-to-ground connection of the receiver power transformer.

In Fig. 1, J_1 , S_1 , T_1 and V_1 are the accessory socket, stand-by switch, power transformer (high-voltage secondary only) and rectifier tube, respectively, for the receiver. If your receiver does not have the stand-by switch and accessory socket wired as shown, it will probably be only a few minutes' work to rearrange the wiring so that the relay control circuit can be used.

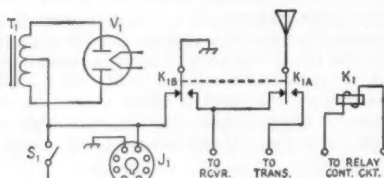


Fig. 1 — Circuit used by W4OHM for antenna changeover and receiver muting. Components are described in the text.

Notice that the circuit provides for activating the receiver power supply by means of the regular stand-by switch as well as by relay section K_{1B} . This permits receiver operation during v.f.o. frequency spotting, etc. Of course, a two-wire antenna system can be accommodated by using a relay having an additional set of contacts.

— Warren Rudolph, W4OHM

USING "SARAN WRAP" IN THE SHACK

A SIMPLE, inexpensive and effective protective cover for ARRL certificates, FCC licenses, QSL cards, etc., can be made with Saran Wrap. Cut a section of this transparent plastic food wrapper to a size slightly larger than the area to be covered or protected. Then take a piece of cardboard and cut it exactly the same size as the certificate, license, card or what have you. Now, sandwich the item to be protected in between the Saran Wrap and the cardboard backing. Fold the transparent wrapper over at the edges and then use Scotch Tape to bind the

loose ends to the cardboard backing.

— Charlie Tiemeyer, W3RMD

A BANDSPREAD HINT FOR NOVICES

SOME of the popular amateur receivers provide very little band spread for the Novice bands. For example, it is not unusual to find that the calibration for the 7.15- to 7.2-Mc. range occupies less than an inch on the 7- to 7.3-Mc. scale. This condition frequently prevents accurate calibration of the "Novice" section of the dial and leaves the operator in some doubt whenever frequency checks are in order.

Fortunately, band spread can be increased in some cases without need for diving into the receiver. If the receiver is one having a tuning rate that requires one full turn — or slightly less — of the tuning knob for coverage of the 50-ke. Novice band, it may be possible to install a homemade circular dial of the type illustrated in Fig. 2. The dial may be held in place behind the tuning knob by means of the tuning capacitor mounting hardware, or it may simply be cemented to the panel. A toothpick cemented to the rear face of the tuning knob may be used as the pointer.

This system has worked real well with the National type NC-98 used here at KN5ESX. As can be seen from Fig. 2, the effective length



Fig. 2 — Sketch of the circular dial used by KN5ESX in the interest of increased "Novice-Band" band spread. The hole at the center of the dial provides clearance for the control shaft of the tuning capacitor.

of the calibrated scale for the 40-meter Novice band has been increased to approximately 5 inches. By making the scale a bit larger in diameter, it might be possible to add a second ring of calibration marks for another band.

— C. Edward Forsythe, KN5ESX

1957 ARRL Field Day Rules

Annual Test for Emergency-Powered Stations, June 22-23

READY for the 1957 Field Day? Almost every active amateur in the 73 ARRL sections already knows that this test of emergency-powered portables squeezes more enjoyment into a single week end than any other operating event. Clubs and other organized groups, working under conditions which could well be encountered in an actual emergency, will set up and operate multi-transmitter stations independently of normal power facilities. Other hams will have a barrel of fun at one- and two-man stations or with mobile rigs. Whatever your method of participation, hundreds of amateurs will be eagerly scanning the bands for your signal.

The rules are the same as last year except in two respects. (1) Contestants now have the option of operating a maximum of 24 consecutive hours out of a total period of 27 hours. A W6 group, for example, can begin its activity as early as 1:00 P.M. PST or as late as 4:00 P.M. PST and still operate 24 hours. More long-haul contacts should result because, regardless of location or time zone, all entrants can now start simultaneously. Those wishing to pack up for home as early as possible Sunday will want to begin at the opening gun. On the other hand, large club setups may prefer to spend additional time on installation, and hold off to start as late as 6 or 7 P.M. EST. Once on the air, however, operating time counts regardless of equipment failures. All reports must show the starting and ending time of the FD operating period selected, this not to exceed 24 consecutive hours. (2) The power multiplier of 2 now applies to transmitter inputs between 30 and 150 watts, not 30 and 100 watts as formerly. See rule 10.

Here are some examples designed to assist participants in figuring their scores:

Example 1

Assume a 25-watt rig wholly on batteries, not originating or relaying any messages, and not having more than two operators.

40 points (40 stations worked)
 $\times 3$ (power below 30 watts)
 120
 $\times 3$ (all radio equipment independent of commercial mains)
 360
 $\times 1.5$ (If Class B or C and everything on batteries)
 540 claimed score

Example 2

Same as Example 1 but one Field Day Message to the SEC or SCM is originated and passed in good form.

65 points (40 QSOs + 25 points for FD message)
 $\times 9$ (3×3 —power multiplier multiplied by independence-of-mains multiplier)
 585
 $\times 1.5$ (everything on batteries)
 877.5 claimed score

(Copies of all messages originated and relayed must accompany Field Day reports.)

FIELD DAY TIMETABLE

Time	Start	End
	June 22	June 23
AST	5:00 P.M.	8:00 P.M.
EST	4:00 P.M.	7:00 P.M.
CST	3:00 P.M.	6:00 P.M.
MST	2:00 P.M.	5:00 P.M.
PST	1:00 P.M.	4:00 P.M.

(Operate no more than 24 consecutive hours out of the total 27-hour period)

Example 3

The Podunk Hollow Radio Club (or any group of three or more licensed operators), portable at its FD site, operates two transmitters simultaneously. Each rig runs 75 watts input and batteries or generators furnish power. One message is started in good form (25 points), 1 is received and relayed onward (2 points), and 230 stations are contacted.

257 points (230 QSOs + 25 + 2)
 $\times 2$ (power input over 30 and under 150 watts)
 514
 $\times 3$ (all gear independent of mains)
 1542 claimed score
 (No battery multiplier for either clubs or groups.)

Call "CQ FD" on c.w. or "CQ Field Day" on phone. Then give the station you work a signal report and your ARRL section or specific location and stand by to receive similar information.

Clubs should strive to have every member-owned mobile unit in action and report their aggregate scores to ARRL. Our increased showing through individual mobile reports and club aggregate mobile scores is important because such units are considered indispensable in c.w. planning.

Convenient log forms and summary sheets are now available from the ARRL Communications Department. You may make up your own, but please remember to include starting and ending time of operating period, bands used, dates and contact times, calls of stations worked, signal reports sent and received, and locations of stations worked. Reports must also show power sources and inputs, location and call of station, number of transmitters in simultaneous operation, number of persons participating, club name (if any) and score computations. To be listed in the final results in QST, mail your logs by July 20.

We suggest you read over the rules below and then review the December 1956 QST report for hints and kinks relative to the last FD, in case you wish to challenge a club nearby. Then get your preparations underway. Let's support the 1957 FD and make it the greatest amateur emergency exercise of all time!

Rules

1. **Eligibility:** The Field Day is open to all radio amateurs in the sections listed on page 6 of this issue of QST.
2. **Object:** For portable and mobile stations to work as

(Continued on page 162)

Announcing the June V.H.F. QSO Party

Fun for All in This June 8-9 Activity

ARRL is pleased to announce another of its popular V.H.F. QSO Parties, open to all amateurs who can work any band or bands above 50 Mc. The contest gets under way at 2:00 p.m. Local Standard Time Saturday, June 8, and continues until 11:00 p.m. Local Standard Time Sunday, June 9. With June one of the peak months for v.h.f. DX, here's a great opportunity to work new states and give the gear a workout, and meet new "World Above" friends at the same time.

Call "CQ Contest" or "CQ V.H.F. QSO Party" to raise other participants. During contact, operators must exchange names of their ARRL sections (see page 6) for full credit.

Work as many stations on as many v.h.f. bands as you can. Count 1 point for successfully confirmed exchanges of section information on 50 or 144 Mc., 2 points for such QSOs on 220 or 420 Mc., and 3 points on 1215-Mc. or higher bands. Then multiply the sum of these QSO points by your section multiplier, which increases by one when the same section is reworked on another band. A station may also be contacted again for credit on each additional v.h.f. band.

A certificate will be awarded to the top scorer in each ARRL section. A certificate also will go

to the high-scoring Novice, Technician, and multioperator station in each section from which three or more valid entries in these three special categories are received.

Send your results, as shown in the sample, to ARRL as soon as the competition ends. A simple tabulation of stations and sections worked is all that is required. For your convenience, free log forms are now available from the ARRL Communications Department.

Rules

1) The contest starts at 2:00 p.m. Local Standard Time, Saturday, June 8, and ends at 11:00 p.m. Local Standard Time, Sunday, June 9. All claimed contacts must fall within this period and must be on authorized amateur frequencies above 50 Mc., using permitted modes of operation.

2) Name-of-section exchanges must be acknowledged by both operators before either may claim contact point(s). A one-way exchange, confirmed, does not count; there is no fractional breakdown of the 1-, 2- or 3-point units.

3) Fixed-, portable- or mobile-station operation under one call, from one location only, is permitted. A transmitter used to contact one or more stations may not be used subsequently under more than one other call during the contest period.

4) Scoring: 1 point for completed two-way section exchanges on 50 or 144 Mc.; 2 points for such exchanges on 220 or 420 Mc.; 3 points for such exchanges on the higher

(Continued on page 164)

SUMMARY OF CONTACTS, JUNE V.H.F. QSO PARTY

Station.....		Class License.....		ARRL Section.....					
Freq. Band (Mc.)	Date and Time	Station Worked	Section	Record of New Sections for Each Band					Contact Points Claimed
				50	144	220	420	Other	
50	June 8								
	2:15 P.M.	W1AQE	E. Mass.	1					1
	2:26	W1RFU	W. Mass.	2					1
	2:38	K2IEJ/2	N.Y.C.-L.I.	3					1
	3:00	W1AQE	E. Mass.		1				1
	3:10	W1OOP	E. Mass.						1
144	3:16	W1DXE	Conn.			2			1
	3:24	K2IEJ/2	N.Y.C.-L.I.			3			1
	3:30	K2JLR	N.Y.C.-L.I.						1
1215	3:39	W1VNH	W. Mass.					1	3
	3:48	W2ONV	N. N.J.	4					1
50	3:55	K2HPN	E. N.Y.	5					1
	4:04	W1OOP	E. Mass.			1			2
220	4:30	W1AQE	E. Mass.						2
	4:45	W2AOC	N.Y.C.-L.I.			2			2
50	June 9								
	8:10 A.M.	W9WOK	Ill.	6					1
	8:20	W0OFZ	Minn.	7					1
	8:43	W6NLZ	Los Angeles	8					1

Number of contacts: 50 Mc. 8 144 Mc. 5 220 Mc. 3 420 Mc. Other 1
 Total contacts: 17 Total contact points: 22 Multiplier: 8+3+2+1=14
 Claimed score: 22 x 14 = 308 Points Final Score

I hereby state that I have abided by the rules specified for this contest and that, to the best of my knowledge, the points and score as set forth in the above summary are correct and true.

Transmitter:..... Signature.....
 Receiver:..... Address.....
 Antenna:.....



Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

RAPTURE

Frick Building
Pittsburgh, Penna.

Editor, *QST*:

I nominate for the Edison Amateur Radio Award, Larsen E. Rapp, WI0U, who in his April article, "A Compact All-Band Antenna," not only has introduced interesting discussions on the air, but who has also eliminated the need for large beam antennas and the resulting neighbors' complaints.

For those amateurs who cannot obtain the large ferrite rod, it is suggested that they fabricate it by welding or gluing together with conductive glue, a number of BCL loopsticks which are readily available at most radio stores or which can be removed from many receivers. It works just fine!

— D. Ferguson, WSAPG

76-10 108 St.
Forest Hills, N. Y.

Editor, *QST*:

With reference to Mr. Rapp's excellent article on the underground antenna, may I add that I have personally been using this system, though with some modification, for years.

I live in an apartment house where it would have been impossible for me to dig a hole deep enough to bury the antenna. I therefore placed it under my living room rug, and brought enough dirt into the house to cover it five (5) feet. Since this was not enough, I took a piece of 300 Ω lead-in — to fool the neighbors — and ran it from the 5-ft. mound down to the basement, and thence to the main water pipe, which takes it down another 25 feet.

Now, since I live on the 3rd floor, this gives me a reflected image advantage ratio of 104X; that is, 35 ft. above ground level; 5 ft. of dirt of the 25-ft. point; 39½-ft. lead-in; and 25 ft. of water pipe.

It works just fine. Not one case of TVI.

— Ray R. Landman, K2AWQ

P.S. May I add that I have the advantage of very little education!!

3837 Campbell
Kansas City, Mo.

Editor, *QST*:

... A point that Mr. Rapp failed to bring out is downward modulation must be used because of the reverse in polarity when using image radiation.

— V. J. Lucas, K0HEC

Box 109
Bayville, N. J.

Editor, *QST*:

I have just finished a series of tests on Larsen Rapp's multiband ferri-tenna, and have noted the following features.

1. Winding the coil with solid ¼ inch-silver rod has reduced the V.S.W.R. from .707:1 to .001:1.
2. Burying the antenna creates the need for a modified ground system. (I used four copper ground wires forming a counterpoise on my roof.)
3. When the higher frequency bands appear to be closing with a conventional antenna system, they appear to be just opening up on the buried antenna.

On the whole, Mr. Rapp's contributions to radio have been a constant source of enlightenment and stimulation to all of us and I believe a show of appreciation is in order. Three cheers and a hearty 73 for Larsen E. Rapp.

— Richard H. Dickhaus, K2HEI

216 South Virginia Avenue
Burbank, California

Editor, *QST*:

While it is often difficult (if not impossible) for the average ham to verify Mr. Rapp's theories mathematically, experimental results are extremely interesting.

My own experience with his antenna is truly astonishing. Extending his theory to include multi-element arrays, I constructed a two-element parasitic beam. The driven element was built according to the specifications called out in Mr. Rapp's article. The parasitic element, a director, was wound on the same type of form but with only 95.45% as many turns for L_2 and L_3 . Optimum spacing was found, after considerable cut-and-try, to be precisely 1.31 feet. The antenna was buried at a depth of 60 feet — the optimum for 20 meters — pointing toward Europe (early attempts to rotate the antenna in a hole resulted in failure, confirming Mr. Rapp's statement that the antenna must actually be buried). It was found that only Oceania could be worked, thus proving that when the antenna is buried, it really does act like an image!

— William G. Miller, K6CEF

APRIL QST

634 High Street
Newark 2, New Jersey

Editor, *QST*:

In your April issue, I got my biggest kick out of "General Operating With Mike or Key." There were many things in it that could help a Novice as well as a General. I hope now that some of the Generals I work will stop this "Hello — Goodbye" type of QSO. Now I want some honest-to-goodness rag chewing.

— Alan Birnholz, KN2VAB

15 W. Upper Ferry Road
West Trenton, N. J.

Editor, *QST*:

The April article "How Well Do You Know the Regulations?" is well written and very timely. May I suggest that similar articles be a regular part of *QST*. I know this type of material isn't dashed off in a spare moment, but the value is so great that the time expended in preparation is worth it.

I fell down on three of the questions myself and know that many others will stumble over these and other questions of the quiz. A monthly page of this type of material would keep regulations and other parts of amateur material fresh in our minds.

— J. B. Jenkins, K2IIV

115 East 138th Street
New York 51, N. Y.

Editor, *QST*:

There were two excellent articles in the April issue of *QST* that seemed to me should not have been included in the magazine! They were "Some QST Abbreviations," and "That Darn 405A" under "Happenings of the Month."

Both are of too long-lasting interest to be lost in one's files of a monthly periodical. Data of this type belongs in the *Handbook*.

— M. K. Bretzfelder, W2JPX

P.S. I am already looking forward to next April's *QST* and the next Ether-Shaking Disclosure by that presumably long-bearded savant, WI0U.

[Editor's Note: 405-A and other renewal dope is in our "handbook," the *License Manual*. Space permitting, we'll have the abbreviations in next year's *Handbook*.]

23rd ARRL Sweepstakes Results

Part II — Phone and Club Totals

BY ELLEN WHITE,* W1YYM

IF YOU FOLLOWED the advice accompanying the May c.w. results, you'd best be seated right now. That upright position is no way to take the facts relating to the terrific results achieved by superlative operators orally active in the 23rd SS. You guessed it; this was the biggest ever with phone participation up 23 per cent over 1955. New records were established thanks to good conditions, better equipment and the best in operating techniques.

Incredible as it may seem, more than thirteen per cent of the competitors summed up points upwards of the 50,000 mark. Among this listing of seventy calls are fifteen, shown in italics, who made more than 100,000: *W1s* BFB EOR FZ GKJ YWU, *W2VCZ*, *K2s* AAA BHP, *W3s* AYS ECR VAM VKD, *W4s* FGH JLV KZF LVV YZE, *K4s* ARU CTU GHA LQA, *W5s* COF DQK IWL KC MYI VU, *K5s* EAT/5 EDG/4 EDQ EXZ, *W6s* AM BSY CBE CPL GTG IIM PQW SIJ SUP TZN ZZC, *K6s* BWD EYR GLC HTL, *W7s* BAD ENA NPV OVA ZZA, *W8s* AJW HQK SSA, *W9s* FVU OHO PQA VOB VZP, *K9CLO*, *W0s* KLP LXA NPR TWH TYK VQC ZQV ZSZ, *K0CRV*, *VE3DNE*. Congratulations to all!

Pacing their respective call areas are: *W1YWU* *K2AAA* *W3VKD* *K4GHA* *W5DQK* *W6AM* *W7ZZA* *W8AJW* *W9OHO* *W0NPR* *KH6CBP* *KL7MF* *KP4DH* *VE2KG* *VE3DNE* *VE5VZ* *VE6IN* *VE7ZM*.

The Potomac Valley Radio Club can chalk up SS gavel #7 with an aggregate score approaching the four million mark. In there were 45 PVRC operators famous as the Frankford Radio

Club, which placed a strong second.

Aside from the following tabulations, the true pulse of the 23rd SS just might be felt by you after reading the ensuing Sidelights. "*Viva la vocalist!*"

Sidelights

Nebraska furnished multiplier #73 for *W5DQK*, *VE8* for *W3VKD* and *W0ZSZ*, Alaska for *W8AJW* and *W0NPR*, Nevada for *W6AM*, while Vermont did it for *W6SUP* and *K2AAA* made it with Wyoming. . . . *W0SHY* wasn't backward in placing first in San Diego. . . . QRP specialist *K0CRV* modulated 45 watts of r.f. to the tune of 314 QSOs and the Colorado award. . . . Sideband specialist *W9RFR* stayed with 75 for 308 fancy two-ways. . . . *W7BAD* did plenty good with a QSO figure of 509. . . . Almost, but not quite, with 72 sections were *K6BWD* *K9CLO* and *W0BCF*. . . . *W6AM's* number 1011 went to *W2COP* with *W1COP* ticketed at 1012! . . . You might know it; *W5JAW* participated in the c.w. section only. . . . On November 19, after 37 hours of travail signing portable *K5EDG/4*, the new call arrived — *K4BZJ*. . . . *K2DEM* was surprised at the lack of 2-meter activity in N.Y.C.-L.I. . . . *K2AAA* attributes his 1215 tallies in part to the opening of ten the second weekend and usage of s.a.b. (50% of his contacts made in that manner). . . . No DX contest this, but hams in Damascus (Md.) and Symrna (Ga.) were on tap. . . . *W7NPV* and *W8AJW* qualify for their fifth consecutive section awards. . . . *W6PQW's* faith in low power, common sense and a good antenna are the "behind-the-scenes" story of his single-band (10 meters) score of 110,391 points, 600 QSOs in 62 sections. Wow! . . . In a colossal endeavor to establish new phone QSO records, both *W6AM* (1219) and *K2AAA* (1215) succeeded in surpassing *W6QUE's* 1950 record of 854. In fact, comparing both c.w. and phone, only one other contestant outdid either vocalist and that was *W4KVX*. . . . Club certificate awards are scheduled to go to 103 among the 89 eligible clubs. . . . Clubs making the box listing are up 19% over 1955. . . . The Aero ARC (Md.) attributes its best score to date to a good location and plenty of rest prior to the contest. . . . The Delano ARC (Calif.) racked up a total of 2249 contacts on 12 valid entries; they are planning to have plenty of SJV operators available come the SS, 1957. . . . The KBT ARC (N. Y.) *W2EWT/2* uses the SS as a medium to increase contest operating efficiency while awaiting the FD. . . .

* Assistant Communications Mgr., Phone, ARRL



VE3DNE manned his convenient station, Viking II-SX88, to lead all other Canadian entries and furnish 300 contestants with an Ontario multiplier.

Contest Quotes

"Someday I'm going to have a rig that works properly on all bands." — W6CRV. . . "Worked 3 new states, only 5 to go." — K2JZR. . . "An 80 m.p.h. wind took down all antennas one week before the SS and I was so tired from

staying up the night before raising antennas that I almost didn't start." — K3E XZ. . . "Believe the usual number of gripes regarding contest QRM was considerably less than in previous years, but that may be due to the extreme amount of QRM cutting off some remarks in connection therewith, hi!" — K6BWD. . . "First weekend band dead. Second weekend out in tundra on a survival

PHONE WINNERS, 23RD A.R.R.L. SWEEPSTAKES CONTEST

Section	Call	Score	Transmitting Equipment	Receiving Equipment	Bands Used
E. Penna.	W3ECR	58,800	32V3	75A4	75, 40, 20, 15, 10
Md.-Del.-D. C.	W3AYS	66,933	5100	75A3; GRP90	75, 40, 20, 15, 10
S.N.J.	K2MZO	28,000	Globe King	NC210D, DB22A	40, 10
W.N.Y.	K2BHP	93,771	DX100	NC183D	75, 40, 20, 15, 10
W. Penna.	W3VKD	140,051	818B-32V2	75A4	75, 40, 20, 15, 10
Illinois	W9OHO	78,840	DX100	SX100; HQ129X	40, 20, 15, 10
Indiana	K9CLO	68,400	BC221-6AC7-6AC7-6AQ6-	HR07	75, 40, 20, 15
			2E26-4-250A	75A2	75, 40, 20, 15, 10
Wisconsin	W9VZP	56,256	Viking II	S76	75, 40, 20, 15, 10
No. Dakota	W0NPR	125,925	Viking II	75A1	75, 40, 20, 15, 10
So. Dakota	W0VQC	102,270	32V2	NC98, HF10/20	15, 10
Minnesota	W0ZZT	44,546	DX100	HQ140X	15
Arkansas	W5HVX	35,219	DX100	HR07	75, 40, 20, 15, 10
Louisiana	W5KC	95,841	32V3	75A3	75, 40, 20, 15, 10
Mississippi	W5DQK	146,621	5100	75A3	75, 40, 20, 15, 10
Tennessee	K4ARU	78,804	Viking II	75A3	75, 40, 20, 15, 10
Kentucky	W4YZE	61,248	5763-6C4-5763-5763-6146s	S76	75, 40, 20, 15, 10
Michigan	W8NSS	46,500	BC459-814s	RME45, VHF152	40, 15
Ohio	W8AJW	115,413	32V1	HQ120X	75, 40, 20, 15, 10
E.N.Y.	K2JMY	34,200	DX100	HR060, DB22A	75, 40, 20, 15, 10
N.Y.C.-L.I.	K2AAA	177,244	SSB100A-SSB1000	75A4	75, 40, 20, 15, 10
N.N.J.	W2VCZ	68,706	Ranger; Viking I	NC300	75, 40, 20, 15, 10
Iowa	W0TYK	76,296	32V1; BC457-6AG7-6L6-813	75A1; HR050T	75, 40, 20, 15, 10
Kansas	W0ZSZ	124,392	6CL6-6AQ5-4E27/8001	75A4; HR050T1	75, 40, 20
Missouri	W0ZQV	70,716	Viking II	75A1	40, 15, 10
Nebraska	K0DLL	17,499	DX100	SX99	20, 10
Connecticut	W1YUW	97,497	Viking I	75A2	75, 40, 20, 15, 10
Maine	W1GKJ	53,382	Viking VFO-Viking II	HR060	75, 40, 20, 15, 10
E. Mass.	W1QIB	40,362	12BY7-2E26-6146s	SX96	75, 40, 20, 15, 10
W. Mass.	W1NPL	42,215	DX100	HR06	75, 40, 20, 10
N. H.	W1FB	85,284	Collins VFO-Viking I	75A4	75, 40, 20, 15, 10, 6, 2
R. I.	W1BFB	68,928	Ranger-813	SX71	75, 40, 20, 15, 10
Alaska	KLTMF	480	AF67	SX25	15, 10
Idaho	W7PVC	24,780	DX100	NC98	75, 40, 20, 15, 10
Montana	W7NPV	67,914	32V1	SX28	75, 40, 20, 15, 10
Oregon	W7OVA	80,487	Viking I	75A1	75, 15, 10
Washington	W7BLX	48,295	6AG7-6V6-813	SX100	40, 10
Hawaii	KH6CBP	20,196	310B-4-400A	75A1	15, 10
Santa Clara V.	K6HTL	70,173	Viking II	NC37B	75, 40, 10
East Bay	W6PQW	110,391	VFO-6L6-2E26-24Gs	HQ129X	10
San Francisco	W6SIJ	70,119	6BA6-6CL6-5763-6BQ6-4-65A	Homebuilt	75, 40, 20, 15, 10
Sacramento V.	W6SUP	138,846	VFO-807s	HQ120X, HF10-20	75, 40, 20, 15
San Joaquin V.	W6ZZC	81,972	DX100	Super Pro	75, 40, 15, 10
No. Carolina	K5EDG/4	51,708	Viking I	SX100	75, 40, 20, 15, 10
So. Carolina	K4GIE	10,602	DX100	SX99	15
Virginia	W4WSF	34,821	Viking VFO-Viking II	SX71	75, 40, 15
W. Virginia	W8SSA	63,054	DX100	NC300	75, 40, 20, 15
Colorado	K9CRV	63,340	Globe Scout	HQ129X	40, 20, 15, 10
Utah	W7QWH	24,780	30K1	75A3	40, 20, 15, 10
Wyoming	W7UF8	12,000	Ranger	NC183D	20, 15, 10
Alabama	W4Ds	25,108	Ranger	SX100	75, 40, 20, 15, 10
E. Florida	K4GHA	107,916	DX100	75A4	40, 20, 10
W. Florida	W4JLV	80,586	32V3	75A2	75, 40, 15, 10
Georgia	W4FGH	59,902	907-811-250THs	HQ129X; SX28; NC183	40, 20
West Indies	KP4DH	126	Viking II	HR0 (modified)	15
Los Angeles	W6AM	263,129	Communicator; VFO-4DB2	RME50, 75A3, DB23	160, 75, 40, 20, 15, 10, 6, 2
Arizona	W7ZZA	87,969	6AG7-6AG7-1614-812As	HR060	75, 40, 20, 15, 10
San Diego	W6SHY	53,808	Viking II	75A3	40, 10
Santa Barbara	W6NTF	21,465	DX100	NC183D	75, 40, 20, 15, 10
No. Texas	W5VU	84,192	32V3	75A3	75, 40, 20, 15, 10
Oklahoma	W5IWL	90,376	5763-5763-5763-6146-813	NC300	75, 40, 20, 15, 10
So. Texas	K5EXZ	71,820	20A-SSB1000	75A3	75, 40, 20, 15, 10
New Mexico	W5MYI	98,892	6AG7-6AG7-6N7-6BL7-829B	SX28	75, 40, 20, 15, 10
Quebec	VE2KE	675	VFO-6V6-807	Marconi R1155	10
Ontario	VE2DNE	60,300	Viking II	SX88	75, 40, 20, 15, 10
Sask.	VE6VZ	35,400	TRITV	HQ129X, DB23	20, 15, 10
Alberta	VE6IN	27,469	DX100	AR77	40, 20, 10
B. C.	VE7ZM	16,275	Viking II	75A4	75, 40, 20, 15

training jaunt with the USAF, temp. 45. Heard that band conditions were hot." — KL7WAH. . . "Had a great time, 5 new states and a KG4 too." — W9UXM. . . "Although my 30,000 points won't win for L. A., this contest was the most enjoyable experience of my 2-year old ham career." — K6TUL. . . "First try at the SS as a General. At 1755 all was quiet on the NCSS, at 1800 bedlam broke loose. With my inexperience it was like trying to peel apart pieces of cold cheese." — W3EYF. . . "Missed VET." — W0BCF. . . "One of the incidents that stands out in my mind concerns the young fellow who had just received his general class, wasn't in the contest and couldn't find anyone who would talk with him. Boy, was he desperate!" — W8SSA. . . "Thanks to Walt of W3VKD for tips leading to my 72nd and 73rd section, also to VE5IW for information on VE4MO. Hate'd off to these gentlemen for their fine sportsmanship." — W0ZSZ. . . "Things got rough on 40 at night." — W5COF. . . "I hope I can remain awake for the 40 hours next session." — W9LKB. . .

"Ten and fifteen came through beautifully." — W8VCZ. . . "Called 15 and worked fifteen. Even when I held the glamorous calls of J8AA, HL1AA and DL4LU I didn't make out with a percentage like that." — W4HVV. . . "First attempt in the phone portion; better I should have stayed on c.w." — W4LVV. . . "Was surprised and pleased to furnish W. Fla. for so many stations." — W4JLW. . . "Booby prize this year, but wait till next year." — W5VUE. . . "Decided to try phone this time to win the trophy put up by the Nortown ARC. Believe me I didn't know what I was getting into." — VESDNE. . . "After hearing K2AAA give out number 1052 during the closing hours of the competition (when I was struggling with 315), I was forcibly impressed with the fact that my 1939 home-made transmitter is at last obsolete." — W2JKH. . . "This was my 2nd SS and I really got a kick out of it, especially when a W1 called me and explained that 15 meters was not the band for this type contest." — W5DQK. . . Both the Order of Boiled Owls (N. Y.) and York RC (Ill.)

CLUB SCORES

Club	Score	Valid Entries	C.W. Winner	Phone Winner
Potomac Valley Radio Club	3,828,933	42	W4KFC	W3ECR
Frankford Radio Club	3,161,348	45	W3JNQ	W8HQB
Ohio Valley Amateur Radio Assn.	1,237,796	20	W4KVC	W1QIB
El-Ray Radio Club (Mass.)	1,060,668	35	W1DDF/1	W6FVU
Chicago Suburban Radio Assn.	725,887	14	W9WBL	W2PRN
Order of Boiled Owls (N. Y.)	707,073	7	W2PRN	W8AJW
Westpark Radiops (Ohio)	683,386	33	W8YPT	W9PQA
Milwaukee Radio Amateurs Club	671,772	18	W9TDE	W4BZE
Garden State Amateur Radio Assn. (N. J.)	591,737	11	W2CQB	W4AVO
Richmond Amateur Radio Club (Va.)	584,032	42	W4BZE	K2EYZ
Tri-County Radio Assn. (N. J.)	546,784	15	K2BHQ	K2MZO
Detroit Amateur Radio Club	469,483	17	W8RLO	W9YFV
South Jersey Radio Assn.	451,706	24	W2EXB	W6BJU
York Radio Club (Ill.)	444,141	19	W9YFV	W8OCQ
Delano Amateur Radio Club (Calif.)	385,484	12	W6RFE	W8OCQ
Lake Success Radio Club (N. Y.)	386,978	18	W2TUK	W8OCQ
Central Michigan Amateur Radio Club	357,594	8	W8OCQ	W8OCQ
Central High Radio Club (Iowa)	352,853	13	W8OCQ	W8OCQ
Mid-Inland Radio Club (N. Y.)	312,126	7	W2RTE	W8OCQ
Hamfesters Radio Club (Ill.)	310,534	16	W9LNU	W8OCQ
Sioux City Amateur Radio Club (Iowa)	308,299	9	W0FZO	W8OCQ
Long Beach Wireless Operators (Calif.)	301,440	4	W6BJU	W8OCQ
Buckeye Shortwave Radio Assn. (Ohio)	298,844	6	W8OYI	W8OCQ
Minneapolis Radio Club	295,661	6	W0RLL	W8OCQ
Philadelphia Wireless Assn.	294,378	12	W3HHK	W8OCQ
Nassau Radio Club (N. Y.)	275,936	7	W2IVN	W8OCQ
Columbus Amateur Radio Assn. (Ohio)	251,465	7	W8QDH	W8OCQ
Connecticut Wireless Assn.	233,938	5	W1BII	W8OCQ
Pacific Radio Club (Calif.)	217,964	7	W9YVG	W8OCQ
Joliet Amateur Radio Society (Ill.)	209,228	7	W9YVG	W8OCQ
Aero Amateur Radio Club (Md.)	207,138	4	W3KLA	W8OCQ
Wisconsin Valley Radio Assn.	206,811	6	W9RQM	W8OCQ
St. Louis University Amateur Radio Club	206,399	4	W4WQT	W8OCQ
Tenn-Tucky Amateur Radio Club (Tenn.)	200,195	3	W4WQT	W8OCQ
Citrus Belt Amateur Radio Club (Calif.)	195,590	4	W2ILN	W8OCQ
Short Skip Radio Club (Penna.)	183,902	11	W1DLE	W8OCQ
Middlesex Amateur Radio Club (Mass.)	182,043	7	W2EMW	W8OCQ
Radio Amateurs of Greater Syracuse	172,696	3	W2VJO	W8OCQ
Niagara Radio Club (N. Y.)	166,813	12	W2PZE	W8OCQ
Suffolk County Radio Club (N. Y.)	163,671	12	W9ZEN	W8OCQ
Starved Rock Radio Club (Ill.)	163,574	13	W8SMK	W8OCQ
Cuyahoga Falls Radio Club (Ohio)	157,723	10	W3ARK	W8OCQ
Pottstown Amateur Radio Assn. (Penna.)	156,250	7	W7AOZ	W8OCQ
Fountain Valley Radio Club (Ore.)	154,463	4	W3HTR	W8OCQ
Northeast Radio Club (Penna.)	149,843	3	W8AXX	W8OCQ
Coronado Radio Club (Calif.)	148,918	3	W0RYR	W8OCQ
Dayton Amateur Radio Assn.	139,292	4	W4ZKU	W8OCQ
Tri-State Radio Club (Nebr.)	133,585	9	W9YFD	W8OCQ
Atlanta Radio Club	129,214	6	W0WME	W8OCQ
Tri-State Amateur Radio Society (Ind.)	126,861	14	W8SWZ	W8OCQ
Montrose Amateur Radio Club (Colo.)	123,505	7	W8SWZ	W8OCQ
Springfield Amateur Radio Club (Ohio)	122,912	4	W8SWZ	W8OCQ
Nortown Amateur Radio Club (Ont.)	118,868	4	W8SWZ	W8OCQ
Westside Amateur Radio Club (La.)	118,787	4	W8SWZ	W8OCQ
Fieldston High School Radio Club (N. Y.)	116,302	6	K2GHS	W8OCQ
Baltimore Amateur Radio Club	114,183	3	W3ZON	W8OCQ
Antietam Radio Assn. (Md.)	113,851	3	K3HILG	W8OCQ
Baltes Amateur Radio Club	113,734	3	W7HYW	W8OCQ
Swani Radio Club (Ill.)	109,541	5	W3JSA	W8OCQ
Casper Amateur Radio Club (Wyo.)	106,894	17	K4CW8	W8OCQ
North Penn Amateur Radio Club (Penna.)	102,492	3	K4JJK	W8OCQ
University of Connecticut Radio Club	101,299	3	W9KXK	W8OCQ
Chattanooga High School Radio Club	99,687	4	W3YOZ	W8OCQ
Blue Ridge Amateur Radio Society (Va.)	97,436	7	K4DWF	W8OCQ
Point Radio Amateurs (Wis.)	85,371	4	W1GVC	W8OCQ
Horseshoe Radio Club (Penna.)	84,904	7	W8AL	W8OCQ
Atlanta Teenage Radio Club	82,640	3	W8AL	W8OCQ
Stockton Amateur Radio Club (Calif.)	82,404	7	W8AL	W8OCQ
Stratford Amateur Radio Club (Conn.)	79,152	3	W8AL	W8OCQ
Canton Amateur Radio Club (Ohio)	74,974	3	W8AL	W8OCQ
Western Electric Amateur Radio Club (Mass.)	69,289	3	W8AL	W8OCQ
Winter Haven Amateur Radio Assn. (Fla.)	62,253	5	W1MEG	W8OCQ
Framingham Radio Club (Mass.)	52,365	8	W3WHK	W8OCQ
807 Society of Central High School (Penna.)	52,136	5	W9CMO	W8OCQ
York High Radio Club (Ill.)	32,340	6	K2IWQ	W8OCQ
Johnson County Radio Amateur Club (Kans.)	31,602	3	K2RYK	W8OCQ
Baldwinsville Academy Radio Club (N. Y.)	29,236	5	K2PLF	W8OCQ
City College Amateur Radio Society (N. Y.)	28,821	5	VE2AVC	W8OCQ
Watchung Valley Radio Club (N. J.)	27,830	5	K2PGP	W8OCQ
South Shore Amateur Radio Club (Quebec)	20,017	5	K2PGP	W8OCQ
Central Queens Radio Club (N. Y.)				W8OCQ

1 W8DJN, opr

2 W6CUF, opr

averaged over 100 thousand points per entrant. . . . For the most part, section leaders operated the 75-40-20-15-10-meter circuit. . . . "I got into this contest just for kicks, but at the end of the first couple of hours I decided to see just what kind of a job could be done on ten alone. Ole ten really came through." — W6PQW.

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The foregoing and following are part and parcel of Sweepstakes history. Fair warning to all who foretold of better things in '57; the two weekends preceding Thanksgiving are announced to all as the 24th SS. A clean sweep for all!

PHONE SCORES

Twenty-Third Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 150 watts (multiplier of 1.5, phone), B over 150 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3ECR. . . . 58,800-280-70-A-21, or, final score 58,800, number of stations 280 number of sections 70, power factor of 1.5, total operating time 21 hours. . . . Multioperator stations, with calls of participants in parentheses, are grouped in order of score following single-operator station listings in each section tabulation.

ATLANTIC DIVISION

Eastern Pennsylvania

W3ECR. . . . 58,800-280-70-A-21
W3WQF. . . . 18,513-121-51-A-24
W3CNI. . . . 18,450-131-41-A-18
W3CTB. . . . 15,552-144-54-B-14
W3RPG. . . . 15,216-160-48-B-17
W3YHU. . . . 11,685-95-41-A-19
W3YLL. . . . 11,115-95-39-A-15
W3CNO. . . . 10,320-80-43-A-6
W3PNL. . . . 9648-101-32-A-12
W3FTT. . . . 9440-102-31-A-22
W3TTW. . . . 9180-90-34-A-12
W3RAE. . . . 5916-68-29-A-9
W3DWN. . . . 5265-65-27-A-16
W3TWL. . . . 4463-60-25-A-6
W3SMC. . . . 4380-73-20-A-9
W3GHI. . . . 3348-63-18-A-6
W3GMH. . . . 1785-66-17-A-6
W3YRN. . . . 1404-26-18-A-9
W3BNR. . . . 1122-22-17-A-3
W3VST. . . . 660-30-11-A-2
W3AAU. . . . 492-21-8-A-6
W3KNO. . . . 351-13-9-A-3
W3YQT. . . . 180-12-5-A-3
W3MAC. . . . 84-7-6-B-1
W3EFY. . . . 60-5-4-A-2
W3EYT. . . . 12-2-2-A-1
W3FOA. . . . 12-2-2-A-1
W3ZJD. . . . 3-1-1-A-1

Md.-Del.-D. C.

W3AYS. . . . 66,933-333-67-A-31
W3VAM. . . . 51,682-284-63-A-26
W3FEP. . . . 45,780-383-60-B-37
W3YRK. . . . 41,789-221-63-A-20
W3PKC. . . . 13,500-125-54-B-22
W3VZZ. . . . 10,740-90-40-A-12
W3BFW. . . . 8748-82-36-A-8
W3OYX. . . . 180-10-6-A-2
W3ZGN. . . . 3-1-1-A-1

Southern New Jersey

K2MZO. . . . 28,000-250-56-B-27
K2BWR. . . . 26,442-228-39-A-32
K2KTS. . . . 17,250-130-46-A-21
W2XN. . . . 16,512-174-48-B-11
W2BLV. . . . 13,938-101-46-A-14
K2AQL. . . . 10,200-76-42-A-34
W2LBN. . . . 9078-91-34-A-24
K2GCD. . . . 6450-87-25-A-11
W2SDB. . . . 1620-30-18-A-5
W2EWN. . . . 1287-39-11-A-19
W2ROW. . . . 1190-35-17-B-7
W2ILN. . . . 189-9-7-A-1

Western New York

K2BHP. . . . 93,771-456-69-A-38
K2DBB. . . . 24,867-154-54-A-29
K2OJF. . . . 17,172-162-53-B-20
W2UMS. . . . 8692-109-41-B-8
W2CGU. . . . 2625-35-25-B-4
W2CTA. . . . 1288-28-23-B-4

K2OSN. . . . 216-9-7-A-1
W2ZRC. . . . 48-6-4-B-1
W2BYI. . . . 12-2-2-A-1
K2BWK. . . . 12-2-2-A-1
W2MTA/2. . . . 3-1-1-A-1
K2KENV (2 ops). . . . 6528-71-31-A-7
W2EWT/2 (12 ops). . . . 4047-71-19-A-21

Western Pennsylvania

W3VKD. . . . 140,051-641-73-A-40
W3YZR. . . . 32,258-201-55-A-23
W3KWH. . . . 15,510-110-47-A-1
W3ABW. . . . 9612-91-36-A-13
W3DKH. . . . 5900-118-25-B-32
W3CAZ. . . . 1404-26-18-A-5
W3ZUF. . . . 297-11-9-A-2
W3ZUG. . . . 48-4-4-A-1
W3AWU. . . . 39-13-1-A-1

CENTRAL DIVISION

Illinois

W9OHO. . . . 78,840-443-60-A-38
W9VOB. . . . 73,284-399-62-A-40
W9FVL. . . . 60,996-300-58-A-36
W9HKE. . . . 46,368-368-63-B-40
W9ATU. . . . 46,272-242-64-A-29
W9TJP. . . . 44,162-254-59-A-27
W9LQF. . . . 41,310-230-66-A-31
W9LIG. . . . 37,572-304-62-B-31
W9RFR. . . . 28,244-308-46-B-15
W9VLR. . . . 27,300-273-50-B-26
W9NNY. . . . 26,553-170-53-A-1
W9GIC. . . . 22,125-151-50-A-17
W9NLF. . . . 21,216-136-52-A-37
K9HBB. . . . 18,968-143-45-A-17
W9PBM. . . . 16,065-135-42-A-20
W9PNY. . . . 13,104-104-42-A-22
W9TSM. . . . 10,004-86-39-A-13
W9FJH. . . . 9264-98-32-A-11
W9IDA. . . . 7227-110-33-B-1
W9IET. . . . 5785-44-29-A-5
W9YK. . . . 5730-51-25-A-10
W9MHC. . . . 3618-67-27-B-4
W9EU. . . . 3306-58-19-A-1
W9UAN. . . . 2970-45-22-A-4
W9HUT. . . . 2080-40-26-B-5
W9QWP. . . . 1872-54-12-A-7
W9OML. . . . 1823-42-15-A-8
W9MFF. . . . 1620-27-20-A-5
W9GVO. . . . 1560-26-20-A-4
W9AVH. . . . 906-24-14-A-8
W9SW. . . . 960-30-16-B-5
K9ACB. . . . 780-21-13-A-14
W9NIU. . . . 36-4-3-A-4

Indiana

K9CLO. . . . 68,400-475-72-B-37
K9AYH. . . . 1596-28-19-A-2

Wisconsin

W9VZP. . . . 56,256-293-64-A-38



Three masterful men with microphones, dominating their call areas and sections through expert 75-40-20-15-10-meter parlance, are (top to bottom) Miss, maestro W5DQK, Ohio's outstanding W8AJW and Conn. champ W1YWU.



East Bay's W6PQW, a ten-meter specialist, likes the challenge of doing a job the low-power (90 watts) single-band way. As evidence, 600 QSOs! His 110,391 points ranks 9th high in the phone competition.

W9PQA...52,502-280-63-A-39
W9LKB...27,746-176-53-A-20
W9CJW...14,850-90-55-A-23
W9JHF...12,960-96-45-A-8
W9LHR...12,000-100-40-A-23
W9GIL...11,040-120-46-B-10
W9FDX...10,100-101-50-B-1
W9MLJ...9,405-98-33-A-1
W9HCN...4,368-57-26-A-10
W9RZD...2,632-49-28-B-17
W9NRP...1,728-36-16-A-8
W9KQD...1,008-28-12-A-8
W9AOW...819-20-14-A-13
W9LXY...702-18-13-A-5
W9SFK...495-15-11-A-8
W9VOD...160-10-8-B-1
W9OMZ...72-6-B-3
K9HEL...60-5-4-A-2
W9UDK...3-1-1-A-5

DAKOTA DIVISION

North Dakota

W0NPR...125,925-581-73-A-38
W0KLP...101,790-535-65-A-37
K0CND...1,377-27-17-A-14

South Dakota

W0VQC...102,270-495-70-A-37

Minnesota

W0ZZT...44,546-262-57-A-29
W0WVO...32,896-257-64-B-27
W0TCE...21,762-142-65-A-30
W0IVY...10,980-148-45-A-19

DELTA DIVISION

Arkansas

W5HVX...35,219-222-53-A-17
W5VUE...644-21-11-A-4
W5KGJ...429-13-11-A-1

Louisiana

W5KC...95,841-463-69-A-30
W5NLN...40,602-202-67-A-22
W5GFS...20,925-160-45-A-19
W5OPS...7,550-75-34-A-12
W5DLR...4,494-55-28-A-5
W5ABD...4,368-57-26-A-7
W5ZAK...2,550-34-25-A-5
W5YVI...1,596-28-19-A-7
W5JET...846-24-12-A-2
W5VND...702-18-13-A-1
W5GAI...179-9-7-A-1

Mississippi

W5DQK...146,621-672-73-A-39

Tennessee

K4ARU...78,804-402-60-A-36
K4AAE...46,128-249-62-A-33
W4IGW...20,706-120-58-A-22
W4FHP...3,940-60-32-B-13
W4CGW...546-14-13-A-2

GREAT LAKES DIVISION

Kentucky

W4YXE...61,248-354-58-A-34
W4KZF...54,600-280-65-A-20
W5ZZK/A...4,568-54-29-A-14

Michigan

W8NRS...46,500-250-62-A-15
W8FEV...45,077-239-63-A-33
W8LZC...23,838-137-68-A-31
W8LON...20,769-152-66-A-24
W8JKD...8,058-79-34-A-18
W8HCW...5,472-67-32-A-16
W8WBG...4,500-60-25-A-10
W8ZPJ...231-37-21-A-10
W8CZK...1,392-29-16-A-7
W8MDG...90-8-4-A-5
W8MNZ (W8S MXY MNZ)...46,900-350-67-B-36

Ohio
W8AJW...115,413-531-73-A-37
W8HOK...989-306-85-A-40
W8ZCZ...44,404-327-68-B-37
W8WYU...38,688-208-62-A-37
W8MFL...34,515-195-59-A-26
W8DUI...23,300-161-49-A-32
W8LON...17,955-133-45-A-34
W8OAC...16,660-170-49-B-1
W8JSW...16,139-102-53-A-15
W8OZW...15,750-131-55-A-25
W8BEH...14,880-124-40-A-22
W8MOW...12,903-127-34-A-16
W8LXA...11,885-95-41-A-16
K8AEK...9,540-108-30-A-11
W8RWZ...8,318-81-39-B-12
W8AJH...5,712-68-28-A-8
W8HQN...4,200-50-28-A-9
W8BSL...3,960-60-22-A-14
W8BPE...3,528-49-28-A-8
W8TQZ...3,510-45-26-A-4
W8DLG/8...3,071-45-23-A-9
W8PCN...3,060-43-24-A-4
W8VUV...2,963-40-25-A-9
W8IMH...2,574-39-22-A-7
W8FBZ...2,260-38-20-A-3
W8INO...2,268-42-18-A-6
W8HMX...2,040-34-20-A-10
W8MZE...1,296-24-18-A-2
W8KTE...945-32-15-A-4
W8EPB...924-22-14-A-3
W8MXF...892-21-14-A-7
W8JAX...817-189-51-A-24
K8HEM...16,056-114-48-A-9
W8PNI...13,455-151-45-B-11
W8PFL...10,760-104-11-A-11
K8CMI...10,371-67-41-A-11
W8WKG...66-11-2-A-2
W8VLD...60-6-4-A-1
W8QON (9 ops)...18,200-188-50-B-25
W8OIV (W8OIV KN0HRN)...11,288-85-43-A-13

HUDSON DIVISION

Eastern New York

K2JMY...34,200-200-57-A-32
K2PPB...16,539-149-37-A-24
W2JYX (W2 JYX PBR)...42,930-243-60-A-38

N. Y. C.-L. I.

K2AAE...177,244-1215-73-B-39
K2KND...22,575-180-43-A-27
K2KXZ...19,710-146-45-A-13
W2MCO...18,570-144-43-A-30
W2PVV...12,204-113-36-A-13
K2TCD...11,037-144-26-A-22
W2JDN...10,098-99-34-A-10
W2ORV...9828-117-28-A-16
W2PDU...7,072-104-34-B-8
W2UNS...6,528-64-34-A-8
K2AED...6,072-92-22-A-16
K2GIC...6,427-67-27-A-22
K2JZR...5,555-60-30-A-7
K2KLN...5,328-74-24-A-4
W2QJL...4,050-45-30-A-1
K2QZS...3,186-59-18-A-10
W2LCU...2,550-50-25-B-5
K2HTO...2,220-37-20-A-8
W2IAW...18,177-40-23-B-6
K2DEV...13,550-25-18-A-3
K2CMY...780-20-10-A-2
W2IWC...765-17-15-A-1
W2OIC...702-18-13-A-4
K2DZI...504-11-12-A-13
W2YHP...408-17-8-A-5
K2JMT...288-32-3-A-14
W2KDC/2...252-14-6-A-2
K2DEI...198-11-6-A-4
W2YHS...90-6-5-A-1
K2EDM (K2E EDM)...67,425-363-62-A-40

Western New Jersey

W2VCZ...68,706-347-66-A-34

W2JKH...45,504-316-48-A-38
K2EYZ...39,060-210-62-A-23
K2OMP...29,376-206-48-A-20
W2DMJ...7,524-70-33-A-4
W2OWY/2...6,732-69-35-A-17
W2WE...3,696-66-28-B-8
K2CVT...1,215-27-15-A-3
K2ORT...525-18-10-A-6
K2TOU...180-10-6-A-1
W2LOP...96-8-6-B-1
K2LSA (K2S HXR JSP)...10,920-130-28-A-19
K2PIM (K2s PIM SEB)...798-20-14-A-20

MIDWEST DIVISION

Iowa

W7TYK...76,296-274-68-A-39
K8GBL...20,808-136-51-A-14
W8RMG...19,800-132-50-A-17
W8SVS...11,952-127-48-B-14
W8FWO...11,343-100-38-A-23
K8BYJ...6,372-59-36-A-14
K8BHU...4820-61-27-A-6
W8GBL...1,440-30-16-A-4
W8TWD...495-15-11-A-3
K8DPI (2 ops)...1938-34-19-A-4

Kansas

W8ZSZ...124,392-572-73-A-38
W8LXA...77,220-397-65-A-32
W8MXG...26,538-161-52-A-18
W8QMS...10,845-121-30-A-15
K8CFI...10,200-101-34-A-15

Missouri

W8ZQV...70,716-332-71-A-31
W8TWH...51,750-295-60-A-23
W8BCE...42,690-147-12-B-26
W8JAX...38,917-189-51-A-24
K8HEM...16,056-114-48-A-9
W8PNI...13,455-151-45-B-11
W8PFL...10,760-104-11-A-11
K8CMI...10,371-67-41-A-11
W8WKG...66-11-2-A-2
W8VLD...60-6-4-A-1
W8QON (9 ops)...18,200-188-50-B-25
W8OIV (W8OIV KN0HRN)...11,288-85-43-A-13

Nebraska

K8DLL...17,499-157-38-A-17
K8EMH/8 (20 ops)...14,508-194-39-B-40

NEW ENGLAND DIVISION

Connecticut

W1YWU...97,497-471-69-A-38
W1EOR...58,338-463-62-B-39
W1FYF...21,252-163-44-A-34
W1AW...15,651-111-47-A-6
W1BAN...14,388-108-66-B-19
K1ABI...8,181-101-27-A-11
W1SKA...4,050-45-30-A-6
W1DHP...621-22-9-A-2
W1LXV (W1s AON BDX)...945-21-15-A-3

Maine

W1GKJ...53,382-288-62-A-39
W1COF...18,986-161-59-B-24
W1EXZ/L...240-10-8-A-5

Eastern Massachusetts

W1QIB...40,362-217-62-A-39
W1JNX...28,728-171-56-A-32
W1PYI...23,256-152-51-A-29
W1LQZ...22,275-135-55-A-12
W1ZVS...16,808-129-45-A-12
W1PMZ...15,708-119-44-A-23
W1QIB...14,700-100-49-A-9
W1SBP...13,256-136-18-B-20
W1TOP...7,788-110-33-B-17
W1OTH/L...7,380-102-30-A-11
W1WIB...7,200-100-36-B-18
W1MEG...3,402-41-28-A-4
W1PMW...1,008-24-14-A-8
W1AQF...660-20-11-A-1
W1PAP...432-18-8-A-5
W1MZP/L...270-10-9-A-5
W1KIN...84-14-2-A-4
G-5-A-2

W1SNK/L...51,27-9-1-A-1
W1SVO...6-2-1-A-1
W1AF (11 ops)...35,563-295-61-B-39
W1IWK...938-5-5-A-14

Western Massachusetts

W1NPL...42,215-245-59-A-31
W1DLA...38,844-254-52-A-29
W1SIR...218-30-24-A-8
W1BKQ...234-13-6-A-4
W1BDV...48-4-4-A-1
W1ZPJ (W1s BDX GHG, W1NLTZ IFH)...513-19-9-A-3

New Hampshire

W1FZ...85,284-413-69-A-40
W1JNC...38,651-205-63-A-32
W1GET...7176-92-30-B-16
W1YCZ...6528-68-32-A-13
W1CVC...2168-36-21-A-6
W1WS...84-7-4-A-1

Rhode Island

W1BFB...68,928-360-64-A-27
W1UTA...945-23-14-A-4
W1YDH...240-10-8-A-3

NORTHWESTERN DIVISION

Alaska

K1LTF...480-20-8-A-3
K1LWAH...16-4-2-B-1

Idaho

W7VVC...24,780-148-56-A-10
W7EYR...5664-59-32-A-7

Montana

W7NPV...67,914-343-66-A-38
W7FNL...28,534-181-49-A-15
W7OIQ...17,145-128-45-A-18

Oregon

W7VOA...80,487-407-66-A-29
W7YOZ...38,400-205-64-A-20
W7PKP...29,912-199-51-A-12
W7SFX...8,352-37-32-A-11
W7ENU...2,244-44-17-A-8
W7DIS...3-1-1-A-1

Washington

W7BLX...48,295-375-65-B-33
W7CCY...10,440-91-40-A-33

PACIFIC DIVISION

Hawaii

KH6CBP...20,196-188-54-B-11
K8GGZ/KH6...2304-32-24-A-11

Santa Clara Valley

K6HTL...70,173-341-69-A-34
K6JQK/6...42,705-222-65-A-37
K6RAM...18,720-131-48-A-14
W6LDO...11,151-80-42-A-11
W1AWM/6...5,487-61-31-A-9

East Bay

W6PQW...110,391-600-62-A-37
W6BRY...84,560-410-69-A-37
W7EYD/6...16,638-118-47-A-10
W6BNI...7,462-91-41-B-13
W6WLL...4140-69-30-B-8
W6/OJW...9-6-5-A-1

San Francisco

W6SJJ...70,119-373-63-A-37
W6CBE...60,434-451-67-B-37
W6OST...21,384-133-54-A-18

Sacramento Valley

W6SVP...138,846-634-73-A-40
W6GTC...79,194-394-67-A-39
W6QIV...15,622-112-47-A-21
W6MYT...4624-69-34-B-1

San Joaquin Valley

W6ZZC...81,972-400-69-A-34

W6TZN...65,514- 361-61-A-25
K6COW...48,458- 25-65-A-23
K6CLX...31,560- 42-25-A-5

W8FQS...2376- 33-24-A-6
K4IKF/8...968- 22-15-A-4

SOUTHWESTERN DIVISION Los Angeles

W5WTY...40,077- 219-61-A-30
K5BSM...34,017- 197-58-A-18

ROANOKE DIVISION North Carolina

K5EDO/4...51,708- 278-62-A-37
K4JOU...41,310- 287-51-A-40
K4COB...52,550- 50-35-A-10
K4IHN...144- 8-6-A-9

ROCKY MOUNTAIN DIVISION Colorado

K6CRV...63,340- 314-68-A- -
W9ECY...19,512- 138-48-A-28
K4AUC...231- 11-7-A-2
W9PQ (9 ops)...86,970- 446-65-A-39

W6AM18...283,129-1219-73-A-38
K6EVR...181,902- 854-71-A-40
W6CPL/4...131,070- 646-68-A-35
W6IIM...93,030- 447-70-A-39
K6BWD...88,992- 412-72-A-31
K6CLC...57,417- 449-66-A-40
K6IUL...30,456- 190-54-A-24
W6EIG...28,812- 175-56-A-34
K6IYJ...28,365- 155-61-A-20
K6PLW...21,024- 146-48-A-15
K6DAS...19,296- 135-48-A-17
W6BUB...17,248- 154-56-A-24
W6DLY...15,000- 150-50-B-19
W6HAL...13,797- 112-42-A-16
K6HXX...7029- 72-33-A-9
W6DNZ...6138- 62-33-A-6
K6KME...3468- 70-27-A-6
K6DDO...4293- 53-27-A-3
K6CEZ...3450- 53-23-A-7
K6IC8...3413- 46-25-A-6
K6DLY...1170- 26-15-A-6
K6MQN...1152- 24-16-A-9

Oklahoma
W5IWL...80,376- 395-68-A-40
W5QVU...13,500- 90-50-A-25

Southern Texas
K5ENZ...71,820- 514-70-B-40
K5EDQ...63,416- 321-67-A-31
W5EWS...25,200- 150-56-A-20
K5BSZ...20,349- 133-51-A-14
K5DJK...12,033- 97-42-A-18
K5AFV/5...273- 13-7-A-3
K5EAT/5 (W5 HYN KNZ, K5EAT, KN5HEW)
102,983- 150-69-A-40

South Carolina
K4GIE...10,602- 93-38-A-9
W4VDG...666- 19-12-A-2

Utah
W7QWH...24,780- 210-59-B-12

Virginia
W4WSF...34,821- 219-53-A-26
W4ZZV...33,660- 188-60-A-39
W4AYO...31,302- 225-47-A-22
W4NQM...28,866- 283-51-B-22
W4KMS...19,992- 136-49-A-20
K4DHS...15,362- 105-49-A-14
W4PRK...13,986- 126-37-A-17
W4IQG...12,540- 110-57-B-15
W4ZCL...6664- 119-28-B-9
W4WIN...6417- 69-31-A-11
W4ZVE...5832- 81-36-B-6
K4ETQ...5811- 81-26-A-9
K4BQK...4872- 56-29-A-4
K4CAD...4785- 55-29-A-11
W4JIE...4500- 60-25-A-5
K4JVE...4032- 50-28-A-15
W4JLS...3861- 30-30-A-9
W4YTZ...2125- 43-25-B-3
W4ZV...1536- 32-16-A-5
K4ACZ...1482- 23-11-A-2
K4IKF...1377- 27-17-A-3
W4IMP...990- 33-15-B-6
W4LLU...861- 21-14-A-4
W4PLS...759- 23-11-A-2
W4JUI...756- 18-14-A-1
K4AL...726- 22-11-A-4
W4BSM...546- 14-13-A-2
W4KAO...540- 15-12-A-5
W4HVV...495- 15-11-A-1
W4MZR...135- 9-5-A-2
W4CA...120- 10-6-B-2
W4JFV...72- 6-6-B-1
W4OWV...72- 6-4-A-2
W4LY...46- 5-4-B-1
W4IYC...24- 4-3-B-1
K4AUN...12- 2-2-A-1
K4IYE...3- 1-1-A-4

Wyoming
W7UFB...12,000- 101-40-A-5
W7PSB...27- 3-3-A-9
W7YJD...3- 1-1-A-1

SOUTHEASTERN DIVISION Alabama

W4DS...25,110- 140-60-A-26
W4NZM...18,189- 195-47-B-13
W4BSG...1583- 30-18-A-5
K4GLB...1003- 32-17-B-5

Eastern Florida
K4CHA...107,916- 529-68-A-36
W4LVY...67,776- 360-64-A-29
K4CTU...59,450- 517-58-B-32
W4HCN...48,960- 255-64-A-31
K4ELB...29,097- 185-53-A-20
W4HRJ...20,900- 190-55-B-23
K4AKQ...10,656- 100-37-A-15
K4KVV...5884- 118-37-B-18
K4DKV...5307- 61-29-A-8
W4IKZ...4770- 34-30-A-4
K4IXG...264- 11-8-A-1
K4DVF...3- 1-1-A-9

Western Florida
W4JLW...80,586- 414-66-A-28
K4LQA...63,900- 356-60-A-30
W4HIZ...16,362- 152-54-B-29

Georgia
W4EGH...59,902- 491-61-B-39
K4APC...3929- 30-27-A-10
W4FYH...120- 10-6-B-3

West Indies
KP4DH...126- 7-6-A-9

West Virginia
W8SSA...63,054- 347-62-A-37
W8UMR...34,988- 188-62-A-16
K8CSG...6278- 78-27-A-10

CANADIAN DIVISION

Quebec
VE2KG...675- 15-15-A-5
VE2AWK (7 ops)...13,872- 137-34-A-21

Ontario
VEEDNE...60,300- 300-67-A-37
VE3AIU...48,906- 372-66-B-24
VE3DYB...21,672- 152-48-A-22
VE3RYL...9870- 95-35-A-25
VE3AML...4743- 51-31-A-9
VE3HB...160- 10-8-B-1

Saskatchewan
VE5VZ...35,400- 202-60-A-22

Alberta
VE6IN...27,469- 182-51-A-29

British Columbia
VE7ZM...16,275- 110-50-A-13

WEST GULF DIVISION Northern Texas

W5VU...84,192- 440-64-A-38
W5COF...50,508- 277-61-A-24

1 W3WPY, op. 2 W3SDV, op. 3 K0HRX, op. 4 W1WPR, op.
5 Hq. staff, not eligible for award. 6 WINW, op. 7 W8GZF, op.
8 KH6CBQ, op. 9 W4FNT, op. 10 W6FRW, op. 11 W6CCF, op.
ARRL thanks the following amateurs for submitting their logs
for checking purposes: K2JYM, W4000, W5QYH, W6CIW/2,
W8 IF PQQ.

Strays

Two young men, W7VMO and W7VMP, turned up at a convention in the Southwestern Division. They looked very much alike and W6XXX, at the registration desk, asked, "Are you two brothers?"

"Yes, we are," they replied.

On further questioning, each boy subscribed to the following facts: Each was named Fenwick. Each was born on April 13, 1936, in Indianapolis, Indiana. Each had a mother named Edna Fenwick. Each had a father named John Fenwick.

As he collected their money and prepared their call-letter badges, W6XXX then said, "You're twins, aren't you?"

Promptly they both answered, "No."

Assuming that all the answers they gave were accurate, how do you account for the fact that they were not twins?

(Turn to page 104)

W1BDI was momentarily staggered by KN8CJX, who told Handy to throw away his 48 QSLs after the WAS application had been checked!

KN2UFB and KN2UFD operate within 4 kc. of each other on 7 Mc., live near each other, belong to the same club, but have never QSOd.



Ham radio was used to facilitate a recent gin rummy tournament conducted by the Las Vegas Resort Hotels. Here W7YKQ (right foreground) plays the hand of Chester Seagars, who was at KC4USN. Assisting were W7RBV, K6BTG/7, W7BRX, K6AFQ/7, W7ZLQ and W6AJP.

National Convention News

SPECIAL FEATURES being planned for the ninth National American Radio Relay League convention in Chicago Aug. 30-Sept. 1 promise to make this one of the most memorable ham conclaves ever held, according to Jordan Kaplan, W9QKE, convention general chairman. The entire show will be under one roof — that of the famous Palmer House — sponsored by the Chicago Area Radio Club Council, Inc. The Young Ladies Radio League's second annual international convention will be held at the same time and place. Some of the features are:

Exhibits: Conventioneers will see the first public showing of new 1958 ham gear on an industry-wide basis. Major manufacturers will have exhibit space and will display their latest transmitters, receivers and other equipment.

Plant Tours: On Friday, the first day of the convention, special buses will be leaving the hotel all day to take visitors out to leading electronics manufacturing plants where there will be guided tours showing the latest in gear, research and manufacturing techniques. Included in the itinerary will be a tour of the world's largest research environmental testing lab.

FCC Examinations: FCC examinations for Novice and Technician class licenses will be conducted Saturday and Sunday by selected members of the Society Radio Operators of Chicago. Examiners from the Chicago office of FCC will conduct exams at the hotel on Saturday and Sunday for General class licenses, and on Saturday only for Extra Class tickets.

Radioteletype: RTTY enthusiasts, as well as those who want to learn more about it, will have an opportunity to see equipment in operation, with special land lines strung into the hotel by one of the news wire services. The Chicago RTTY group will give demonstrations of audio-frequency-shift keying. Other demonstrations will be given on auto-start and -stop, and technical discussions will be given on possible narrow-shift standards. Interested persons also will be able to learn how to get into RTTY at low cost.

Mobile: There will be a special mobile room and present plans call for forum discussions of transistor applications to mobile gear. There also will be a forum on hidden-transmitter hunts. The mobile room will feature displays of mobile gear of all types, and a mobile trouble-shooting clinic will be open throughout the convention. Mobiles with problems can bring their headaches here for relief. Also among the displays will be one of mobile QSL cards.

Novice: There will be a special program aimed at Novices, Technicians and any others interested in getting a start in ham radio. Lewis McCoy, WHCP, QST Technical Assistant, will give talks of interest to beginners, whether they hold licenses or not.

For the Ladies: Special activities are planned for the XYLs who don't hold ham tickets, includ-

ing a tour of WNBQ, the world's first all-color TV station, and attendance at the coast-to-coast "Club 60" show emceed by Dennis James. There will also be a tour of Marshall Field's famous department store, plus a luncheon in the store's Wedgwood Room, during which there will be an initiation into the SWOOPS, an organization open only to unlicensed YLs and XYLs.

Many other features are planned, including special AREC and RACES programs, Army and Air Force MARS displays, a Wouff-Hong initiation, a c.w. contest, awards for the best QSLs, the best operating aid, best homebrew transmitter and receiver, best hints and kinks, best homebrew test equipment, and the photo best showing amateur radio activities such as field day or emergency work. There will be special meetings and dinners for DX Century Club members, v.h.f. enthusiasts and members of the YLRL.

Actually, the convention is shaping up as the biggest family affair in the history of ham radio. The hotel is setting up a baby-sitting service for all those little "harmonies" who can't be left alone while the XYL and OM are taking in the show. A completely equipped nursery and playroom, with a registered nurse and trained play supervisors in attendance, will be available. The hotel's Chicago Room will be converted into a children's restaurant for the convention, with menus (and prices, too!) especially planned for the kids and parents. Also with families in mind, the hotel has set up a special rate schedule: up to four members of the same family can occupy a large master bedroom (four beds) for \$16 a night; single rooms are \$9 per person; double room (double bed), \$14; double room (twin beds), \$15. Dormitory type rooms also are available for four or more persons to a room at \$3 per person per night. Requests for room reservations should be sent direct to the hotel.

Pre-registrations for the convention and banquet are now being received. Rates, including the banquet, are \$10.50 when made in advance, or \$12.50 if made on arrival. For those who don't plan to attend the banquet, the rates are \$5.50 and \$6.50. Because of limited space, banquet tickets cannot be purchased without registration. Tables of 10 are available if 10 reservations are sent in a block. Advance registrations should be mailed to the Treasurer, Chicago Area Radio Club Council, Inc., P. O. Box 6797, Chicago, Ill.

Treasurer of the convention is Bill Traxler, W9FUF; committee chairmen include: exhibits, Fritz Franke; hotel, Bud Balaste, W9QCR; program, Phil Haller, W9HPG; YLRL, Cris Bowlin, W9LOY; food, Ed McMullin, K9AXK; legal, Bill Peterson, W9VTV; awards, Doc Krynski, W9SQR; Novice exams, Bill Harper, W9BWM; registration, George Nesbed, W9LQF; contests, Lee Weaver, W9KCE, and publicity, Bob Seals, K9AHK.

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON,* WHDQ

WHEN the 50-Mc. band was opened to Technician Class licensees in April, 1955, everyone felt that it would be a fine thing for 6-meter activity. But to some, this writer included, the move represented an abandonment of the original concept of the license that might be called an "advanced beginner's" ticket. In case you've forgotten, or weren't around when the license was made available, potential technicians (small *t* this time) were supposed to be waiting in droves, on the outskirts of amateur radio, to jump in and fill our u.h.f. and microwave bands, if only they could get a license without developing code skill.

The mob of microwave pioneers never materialized out of the bushes, however. The Technician (capital *T* again) turned out to be a fellow who took the ticket along with the Novice grade, if he could handle the technical questions — but he thought of the license mainly as a means of

winners in the game — they wanted to talk to people — lots of people, and in the easiest and least expensive manner possible.

Making the license usable on 50 Mc. was a tacit admission that merely making it easy to get



Two happy 6-meter men gloat over prize QSLs. At the left, W8LPD displays ZE2JE card confirming the first Western Hemisphere 50-Mc. contact with Africa. W8PBU holds his for contact made with VQ2PL, shortly after.

keeping his foot in the FCC's door, while he boned up on the code. The idea of actually using the ticket to go on 220 Mc. or higher bands rarely occurred to most of its holders. There was a faint trace of Technician interest on 220 and 420 Mc. in some population centers, and the ARRL Information Service was called on to answer quite a few letters about simple equipment for 220 and up — but by and large the new license accomplished little in populating our u.h.f. and microwave bands. Technicians were like all other be-

W0ZJB...48	W4CPZ...45	W8SQU...46
W0BJV...48	W4UCH...45	W8NQD...45
W0CJS...48	W4QN...44	W8UZ...45
W5AJG...48	W4EQR...44	W8RWF...45
W5ZHL...48	W4FLW...44	W8LPD...44
W9OCA...48	W4UMF...43	W8HLR...43
W6OB...48	W4IRK...42	W8YLS...41
W6INI...48	W4RFB...42	W8PCK...38
WHDQ...48	W4ONC...41	W8NOB...34
W5MJD...48	K4DJO...42	
W2HDZ...48	W4MS...41	W9BRN...48
W1LL...48	W4AZC...40	W9ZHR...48
W0DZM...48	W4FNR...40	W9QUV...48
W0HVW...48	W4HJ...38	W9VZP...47
W0WKB...48	K4DNG...37	W9RQM...47
W0SMJ...48	W4ARK...36	W9ALU...44
W0OGW...48	W4YV...36	W9QKM...47
W7ERA...48	W4GJO...35	W9UIA...45
W2OU...48	W4ZD...35	W9UN...45
W6TMI...48	W4ZBQ...34	W9MHP...42
K6EDX...48	W4HZG...34	W9MFH...42
		W9JEP...42
W1VNH...47	W5VY...48	W9CJL...41
W1CLS...47	W5EFW...47	
W1CQY...46	W5LPL...47	W0ORE...48
W1LBN...46	W5GNO...46	W0QIN...47
W1AEP...46	W5ONS...45	W0NFM...47
W1RFU...44	W5ML...44	W0TRX...47
W1FOS...44	W5FSC...44	W0KYF...47
W1KHL...42	W5JLY...43	W0MVG...47
W1ELP...41	W5JME...42	W0LOL...46
W1STZ...37	W5VY...43	W0USQ...45
W1SPX...36	W5EAL...41	W0FKY...45
W1UHF...35	W5HEZ...41	W0CNM...44
W1LGE...33	W5BXA...41	W0YJP...44
W1WAS...31	W5HLD...40	W0URQ...44
W1MFM...30	W5FXN...40	W0JHS...43
W1FTE...29	W5EXZ...38	W0PI...43
W1FMK...26	W5ELQ...38	W0PKD...41
	W5FRK...36	W0ZTW...41
W2MEU...47	W5HPT...33	W0QVZ...40
W2AMJ...46	W5WZF...33	W0VTK...36
W2BYM...46	W5NSJ...32	K0BPM...35
W2RLV...45	W5ZVF...31	W0WNU...34
W2FHL...45		W0YZZ...30
W2RGV...44	W6WNN...48	
K2JNS...42	W6UNX...48	VE3AET...45
K2XAG...42	W6AXN...45	VE3AIB...35
W2SHV...41	W6NDP...45	VE1EF...35
W2GYV...40	K6GTG...44	VE3BHX...33
K2HFN...39	W6KCG...43	VE1QY...32
W2ORA...39	K6HYV...43	VE2AOM...31
W2QVE...38	W6ABN...43	VE2BFR...31
K2ITQ...38	W6IWS...41	VE1EP...27
K2ITP...38	W6CAN...40	XEIGE...23
K2HRB...37	W6BWG...39	VE1PQ...23
K2LTF...37	K6ERG...38	VE1WJ...22
	W6OJF...31	VE1WJ...21
W3TIF...45		C06WW...21
W3KMY...44	W7FFE...48	VE4HS...20
W3NKM...44	W7HEA...47	C0ZNX...16
W3MQV...41	W7BQX...47	LC9MA...16
W3MXW...41	W7FDJ...46	PZ1AE...15
W3OTC...40	W7DYD...47	JALAC...15
W3FPH...40	W7ACD...44	
W3RUE...41	W7JRG...43	
W3LFC...37	W7BOC...42	
W3AMO...36	W7JPA...42	
W3TDF...35	W7EIV...40	
W3UQJ...30	W7CAM...40	
	W7UFB...32	
W4EQM...47		
W4FBH...46	W8CMS...47	
W4LNG...45	W8OJN...46	

Calls in bold face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.

*V.H.F. Editor, QST.

a ticket will not build up our experimenter population. The move touched off a boom in 50-Mc. activity that is still in the mushroom stage. There has never been anything like it in v.h.f. circles since the long-lamented simple-gear days on 5 meters, back in the early '30s.

After two years' experience, what has happened in the Technician ranks, outside of the rush to get on 6 and have fun? To everyone's surprise, we now find an appreciable move higher in frequency as well. The Technicians are looking for new worlds to conquer, and having got into the game actively on 6, they are now going to 220 Mc. There is a lesser, but still recognizable, growth in 420-Mc. activity, and even some signs of life on 1215 Mc. and still higher frequencies, that can be traced to the Technician influence.

The 220-Mc. band is turning out to be a natural for many of the newcomers. Equipment is not particularly difficult to build there, with modern techniques, and coverage is almost identical to 144 Mc. A good 220-Mc. array often can be erected in a spot where even a 6-meter beam looms large on the neighborhood skyline. TVI, easy to control on 50 Mc. except where Channel 2 is involved, may be too rough a battle in Channel 2 areas for some beginners. For them, 220 Mc. may be a real lifesaver. No band, v.h.f. or other-

wise, is completely free of TVI, but 220 is as good as most, especially when lower power is employed.

For years most contacts made on 220 were the "arranged" variety. No more! In many regions there is now routine operation 220, and the "How-about-looking-for-me-on-220?" approach is becoming the exception, rather than the rule, as a means of checking out 220-Mc. gear. With nightly and week-end activity, 220 is getting a chance to show what it is capable of in the way of coverage. Reliable skeds are being kept over 100 miles and more of rough terrain. When tropospheric conditions are good, the signals boom in on 220 over paths such as Western Massachusetts to Eastern Pennsylvania, or Rhode Island to Upstate New York, to name typical examples.

As a dividend, 220 is showing that it is often quite good for aurora DX. There is a considerable difference between 50 and 144 Mc. in the number of aurora openings, and 220 is perhaps a similar step in the more-difficult direction, but some auroras do provide strong signals on 220 Mc. over distances that may reach record proportions. We have little experience to go on so far, but there seems a real prospect of working out to distances beyond 1000 miles by this means when we get enough activity in the right places.

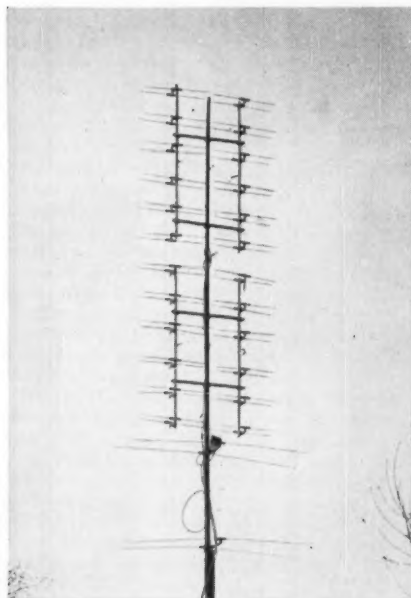
April showed the way in the aurora department. On the night of the 18th more 220-Mc. auroral contacts were made than in probably all previous experience on the band. W3LZD and W3ARW, near Scranton, Pa., worked W1VNH, Agawam, Mass., with good signals. W1RFU, Wilbraham, Mass., hearing this going on, was getting ready to join in when he heard an S8-to-9 signal from W8IJG, West Richfield, Ohio. Bill called him, and what is believed to be the first W1-W8 220-Mc. aurora QSO was on. Contact was made around 1930, and W8IJG continued strong for the W1s and K2GRI, near Saratoga Springs, N. Y., for the better part of an hour.

W1VNH, W1RFU, W3LZD, W3ARW and K2GRI all report that W8IJG was stronger than W8s often are on 144 Mc. How far could the DX have been stretched if fellows in Michigan, Indiana, Illinois, Wisconsin and Kentucky had been going on 220-Mc. c.w. with good setups that night?

Here and There on the V.H.F. Bands

From our vantage (?) point in New England we got the impression that there was little in the way of v.h.f. DX, other than aurora, since we last reported to you, until we dug into the IGY project files. There quite a different story unfolded. There was plenty of aurora, certainly, but the IGY record shows that there are areas in the world where 50 Mc. was about the ideal DX band this spring. Users of lower bands seldom had it any better than did our 50-Mc. friends in Argentina, Chile, Uruguay, Mexico, Guatemala and Japan.

LU7AT, Buenos Aires, reported 50-Mc. DX every day in the first half of April—and what DX! Mike heard or worked DX almost around the clock many of these days, a typical session running through to 0100 or 0200. On April 9 he logged YV5GO and XE1GE around 1400 LU time. JA2JJ, halfway around the world, was in at 2210, followed by XE1GE again, at 2315. CO2XZ was worked at 2320. OA4BR, KZ5JS and YV5BX were heard around midnight, and a DX signal, believed to be KH6NS, was logged at 0200 to 0230 on the 10th. Mike was back at it by 1430,



This towering structure is a 96-element collinear array for 432 Mc. in use at W8JLQ, Toledo, Ohio. Below it is 4 halfwaves in phase, with reflectors, for 144 Mc. The 432-Mc. job has feedpoints at the center of each 6-element curtain. Coax line and a balun connect to the center of a 3-wavelength phasing line running up the middle of the array. Two 1-wavelength repeaters are used at the ends of the vertical section, and these feed the centers of four 2-wavelength repeater sections that join the 6-element bays in sets of 2.

finding the band open to California, with K6GMX, K6EQB, and W6PUZ coming through. CO2XZ and CO2XE were in at 1600; XEIGE at 1610 and 1800. W6PUZ again at 1900. KH6PP was heard at 2100, and an opening to Japan lasted from 2100 to 2305. JA2GR, JA1GP and JA7BY were worked, and JA1, 2, 3, 6 and 8 were heard. On the 11th the band opened to Mexico in the late afternoon, to YV, KH6, PZ, W4, PJ2 and PY through the evening, and to TG9 after midnight. The band repeated about the same performance the following day, and added Puerto Rico to the list. These, with the regulars CE, LU and CX, are fifteen countries workable on 6 in a span of less than 24 hours, with repeats nearly every day or night. Ah—for that transequalatorial scatter!

In Japan things were about as hot, with many JAs working into South America. CX2RE is the farthest east to be worked from Japan, but the JA1GP-CX2RE DX figures out to be somewhat less than that for JA6FR to the LU's, the 12,000-mile record. JA2GR reports working VK4NG several times crossband, with VK4NG on 28 Mc. The Australians no longer have the 6-meter band.

DX was reported worked on 6 from the United States mainland on March 25 (W8CMS-LU9MA), 28 and 30. The 28th seemed to be the most widespread, with LUs reported by W5FXN, K6GTG, W0EDM, W0MVG, W0ZJB and possibly others not yet in. LU7AT's list for that date includes XEIGE, W0s TF AEH EDM DDX ZJB MVG INL, K0s BDL DXJ, K0s GMX HYY EWS GMV, W0s FXN HHF, LFQ, KH0s NS PP BRJ, KZ5JS and PJ2AN! In April U. S. stations worked into South America on the 4th, 6th, 7th, 10th, 11th, 13th and 14th, up to the middle of the month. Most of the reports are from W0s and W0s, but a batch of QSLs from LU3DH confirms early-morning contacts with several Maine and Massachusetts WIs on March 30. The March 28 opening affected Iowa, Kansas, Missouri, Texas and California, that we know of.

Aurora was frequent on 50 and 144 during April. It was reported all across the northern part of the country April 9 and the April 18 session should be some kind of record when the reports are in. Mostly, though, the auroral intensity was off somewhat from March. From March 16 to April 15, aurora was reported on just half the days, but the DX and length of openings were not comparable, generally, to a month earlier. A report on the March 27 aurora was received by W2CXY, Chatham, N. J., from W4DBW, Rome, Ga., who heard both ends of Walt's QSO with W9ZIH on 144 Mc. Aurora reports that far south have been rather rare on 2 meters. But the phenomenon is not necessarily rare, for W4IKK, also of Rome, has caught seventeen auroral openings on 50 Mc. since April 21, 1956.

Coincidence Department: K6JBW, Garden Grove, Cal., worked LU9MA on April 7, 1956, at 1150 PST. On April 7, 1957, he worked him again, only 40 minutes away from exactly one year later.

Prospects for 50-Mc. DX in the easterly direction have improved somewhat, politically, at least. Just too late for inclusion in last month's QST, word came from CT1CO that amateurs in CT1, Portugal, CT2, Azores Island, and CT3, Madeira Islands, have received permission to operate between 50 and 52 Mc. through December, 1958. This is a special temporary arrangement, obtained, at CT1CO's suggestion, by the IARU affiliate society, the *Rede dos Emissores Portugueses*, from their government authorities.

There is a good chance that some other European countries may give similar temporary permission, during the IGY period, to technically qualified amateurs. SM5AOG, a recent visitor at ARRL Headquarters, brought us the good news that the SRA, Sweden's IARU society, is confident that 50-Mc. work will be possible there soon, on a limited scale. The SMs are far from any European TV stations in the 50-Mc. region, so the prospect of interference is very slight, if not completely nonexistent. Judging by the harmonics and other commercial signals received from the Scandinavian countries on 50 Mc. here last fall, our friends in Sweden should do very well in this direction on 6.

Portugal, the Azores and Madeira Islands look good, too. Portuguese hams have had little opportunity to work in this part of the spectrum in the past, so not many stations have equipment that can be put to work right away, but several fellows are interested. CT3, by the way, counts for Africa in the WAC picture.

Other countries are making the 70-Mc. band available in Europe, the latest being Finland. The Radio Society of Great Britain is sponsoring a 70-Mc. contest the week end of June 22. Crossband work to 50 Mc., where that band is

in use, will be included. Also participating will be the countries where the band is around 72 Mc., as in France. Other v.h.f. contests on the Region I IARU calendar are 1250-Mc. tests, Aug. 25 and another 70-Mc. contest, Nov. 16 and 17.

Club and Net News

Several special events of interest to v.h.f. enthusiasts are in prospect for the summer months. First is the ARRL National Convention, to be held in Chicago, Aug. 30 through Sept. 1. An extensive program is being set up by V.H.F. Chairman W9WOK, and v.h.f. clubs throughout the country will shortly be hearing from John along this line.

A summer event that has been a must for v.h.f. hams for some years is the Turkey Run V.H.F. Picnic. As before, W9ZHL is in charge. The picnic begins at 8 A.M. and lasts

2-METER STANDINGS

States	U. S.	States	U. S.
Area	Miles	Area	Miles
W1REZ...	24	7	1175
W1FZJ...	21	6	1120
W1RPU...	20	7	1150
W1HDQ...	20	6	1020
W1KCS...	19	6	1080
W1AZK...	18	6	850
W1AJR...	17	5	810
W1IZY...	17	6	750
W1U1Z...	17	5	680
W1BCN...	16	5	650
W1KHL...	16	5	540
W1AFO...	15	5	810
W1MMN...	14	6	800
W2ORI...	27	8	1040
W2NLY...	27	8	1050
W2AZL...	23	8	1050
W2BLY...	23	7	1020
W2DWJ...	21	6	720
W2OPQ...	20	6	970
W2AMJ...	20	6	960
K2CEH...	20	7	910
W2PAU...	20	6	880
W21TH...	19	7	850
W2AZP...	19	7	650
K2IXJ...	19	6	925
W2CBB...	19	6	740
W2KIR...	19	6	—
K2IEJ...	18	6	745
W2AOC...	18	6	660
W2LHJ...	18	7	620
W2RXG...	17	6	675
W28HT...	16	6	650
W2PCQ...	16	5	650
W3BGT...	28	8	740
W3RUE...	28	5	850
W3IBH...	23	7	650
W3GKP...	23	6	800
W3FPH...	21	8	—
W3TDF...	21	6	—
W3KCA...	21	7	—
W3LZD...	20	7	—
W3KWL...	19	7	740
W3NKM...	19	8	660
W3VTH...	19	6	800
W3BNC...	18	7	750
W3LNA...	16	7	720
W4HHK...	29	9	1280
W4HJQ...	26	7	750
W4AO...	23	7	950
W4DWU...	22	6	675
W4JCJ...	22	6	660
W4UMF...	21	6	720
W4MKJ...	20	8	725
W4JFV...	18	7	830
W4OLK...	18	6	720
W4VLA...	17	7	825
W4WNL...	17	7	750
W4TLV...	16	7	1000
W4CLY...	15	5	720
W4ZBU...	14	5	800
W4WCB...	14	5	—
W4TCR...	14	5	720
W4IKK...	13	6	720
W4SOP...	13	6	680
W4LTU...	13	6	1080
W4CPZ...	12	5	650
W4WV...	11	5	850
W4MDA...	11	5	680
W4GIS...	9	2	335
W5RCI...	21	7	925
W5HEH...	15	7	830
W5AJG...	15	6	1280
W5ABN...	12	5	780
W5QNL...	10	5	1400
W5CVW...	10	5	1180
W5BKV...	10	3	600
W5MWW...	9	4	570
W5ML...	9	3	700
W5NDE...	8	3	520
W5PZ...	8	2	500
W5FEK...	8	2	580
W5VSV...	21	7	925
W5HEH...	15	7	830
W5AJG...	15	6	1280
W5ABN...	12	5	780
W5QNL...	10	5	1400
W5CVW...	10	5	1180
W5BKV...	10	3	600
W5MWW...	9	4	570
W5ML...	9	3	700
W5NDE...	8	3	520
W5PZ...	8	2	500
W5FEK...	8	2	580
W6VMP...	6	4	1280
W7LJE...	6	3	1020
W7LHL...	6	3	1050
W7JCO...	2	2	353
W7JIP...	2	2	850
W7JZU...	2	2	240
W7JCO...	2	2	140
W8WXY...	28	8	1200
W8RMH...	28	8	800
W8RW...	27	7	850
W8FQ...	26	7	850
W8LCL...	25	8	800
W8LDP...	25	8	750
W8LOF...	24	8	700
W8SVL...	22	8	725
W8JWV...	22	8	710
W8PT...	22	7	810
W8BA...	21	8	685
W8WRN...	20	8	670
W8CP...	18	7	800
W8ZCV...	17	7	970
W8RWV...	17	7	630
W8LCY...	17	7	610
W9KLR...	30	8	950
W9WOK...	28	8	800
W9FVJ...	26	8	850
W9ZHL...	25	8	760
W9CPS...	25	8	820
W9GAB...	24	7	1100
W9EHN...	24	7	725
W9HPV...	23	7	1000
W9UHC...	22	8	750
W9UED...	22	7	960
W9AAG...	21	7	850
W9KPS...	21	7	690
W9MUD...	19	7	640
W9REM...	19	6	—
W9LFC...	19	6	—
W9ALA...	18	7	800
W9JGA...	18	6	720
W9MBI...	16	7	660
W9JYI...	15	7	560
W9LEE...	15	6	780
W9DSP...	15	6	760
W9DDG...	16	6	700
W0EMS...	27	8	1175
W0HHD...	26	7	870
W0RCD...	23	7	1065
W0TOP...	18	6	—
W0NQ...	17	6	1000
W0INQ...	13	6	—
W0USQ...	14	6	750
W0OAC...	14	5	725
W0FJF...	12	5	775
W0SMJ...	12	5	775
W0ZJB...	11	4	650
VE3DIR...	26	8	915
VE3BQN...	17	7	790
VE3DER...	16	7	800
VE3RBP...	13	6	715
VE2AOK...	12	5	550
VE3AOG...	11	7	800
VE1QZ...	11	4	900
VE7FJ...	2	1	365

all day. There will be special attractions for the ladies and the kids, for this is a family affair. Bring your basket lunch and join the fun. The date is July 28; the place is the State Park from which the party gets its name, near Terre Haute, Ind.

The Mt. Airy V.H.F. Club of Philadelphia is holding its annual picnic Aug. 11 (rain date Aug. 18) at the Fort Washington National Park, in Flourtown, Pa. Take Route 309 to Flourtown, where signs will be posted to direct drivers to the picnic site. More details any Monday night at 2000, when their Pack Rats Net holds forth on 144.2 Mc.

Many clubs and other v.h.f. groups are planning special trips for the June V.H.F. Party and the ARRL Field Day, the 8th and 9th and 22nd and 23rd, respectively. One such operation of special v.h.f. interest is planned by W4ZZ. Brownie & Co. will be at a high elevation in the Great Smokies Mountains, on the Tennessee-North Carolina line, about 30 miles NNW of Asheville, N. C., June 20 through 23. They will be on 50.04 and 144.45 Mc., mainly, and will be in a position to work from either state on either band.

A new group with excellent potential for improving relations between amateur radio and the public at large was set up recently in the Dallas area. Known as the 6-Meter Mobile Emergency Corps, it is the brainchild of K5DXJ. K5BQA reports that the Corps grew out of a social group that developed informally on 6 last winter, when activity on the band first began to develop sizable proportions. It wasn't long before they had a chance to show their mettle, in the tornado that struck the west side of Dallas on April 2. Working with other groups on the various bands, the 6-meter gang provided communication between the Dallas Red Cross Headquarters and the disaster area, and made possible constant communication ferrying of personnel and supplies. The emergency organization is set up in business-like fashion. All mobiles must carry AREC mobile cards to take part in actual emergency operations, and members are asked to monitor 50.25 or 50.55 Mc. when not in communication. Drills are held each Wednesday at 1930, on 50.55 Mc., and participation in these is a requirement of membership.

VE1PQ, Bedford, N. S., writes of an informal gathering on 50 Mc. each night at 2200, in the Halifax area. Regular participants are VE1s WL OM ZR and PQ.

Need Vermont on 6? There are stations in the Brattleboro area ready to supply contacts with the Green Mountain State. In fact, they're actually putting on a campaign to get more fellows to look up their way. W1FMK says that the "6 X 6 Net" is giving a certificate to anyone who works three or more of their members. About 12 stations are now active, with W1s FMK TDG SDG AZV and MH on most regularly. Smitty will be operating on 50 and 220 Mc. from Hogback Mountain during the June V.H.F. Party.

K4DJO, Memphis, Tenn., reports operation of the Tri-State 6-Meter Net, Sunday mornings at 0800 CST. Stations call in from Arkansas, Mississippi and Tennessee. Net frequency is 50.1 Mc., and K4DJO serves as NCS.

220 and Up

Some details of recent aurora work on 220 were reported in the lead portion of this department. Details of the gear used might be of interest. W3LZD has a pair of 4X250Bs at 1 kw. on 220-Mc. c.w. This high-efficiency setup feeds a box array of four 10-element Yagis, with two wavelength separations each way. He heard 220-Mc. aurora signals April 15-18, four nights in a row. On the 18th he worked W1VNH, for what is probably the first W1-W3 220-Mc. aurora QSO. His converter has a 417A r.f. stage. Both he and W3ARW also worked K2GRI the same evening. K2GRI has a 4X150A at 250 to 300 watts input, and four 6-element arrays in a box formation.

W3ARW's setup is of interest, in that he has 600 watts input to a pair of 4-125As, showing nearly fifty per cent efficiency. He has a fine mountain-top location and a 6AN4 converter.

W1RFU and W1VNH both have 5894 amplifiers, driven by 6360 exciters similar to that described in the *Handbook*. Both use *Handbook*-type converters, with 417A r.f. stages added.

W1VNH's nightly skeys with W3ARW and W3LZD at 2115 and 2215 paid off for the first time on the night of April 23, when improved tropospheric conditions enabled them to have their first QSO other than the aurora contact previously mentioned. That same evening, W1VNH also

worked W1AZK, Chichester, N. H., W1JDF, Methuen, Mass., and heard W1PZA.

W3LZD and K2GRI feel that whenever there is usable aurora on 144 Mc. they can work out on 220. W3LZD had an aurora crossband QSO, 220-144 with W1AZK, at 1800, April 17. Both he and W3ARW worked K2GRI between 1905 and 1920, but when they checked with W8DX between 1950 and 2030 there was no signal on the higher band.

Word from W5GHL, Houston, Texas, indicates that there is 220-Mc. activity coming up there. He and W5s WZF and EWN are getting on 220. 220-Mc. activity is also on the upgrade in the Los Angeles area, according to several reports. W6DNG recently completed converters for 220, 432 and 1215 Mc. W6NLZ says that a good receiving bet for the 1215-Mc. band is the r.f. cavity from the surplus CPR-46ACJ. It works on 1215 Mc. nicely with a 416B, either as an r.f. amplifier, or as a tripler for transmitting.

Up in the Northwest, the big push during the winter season was to get on 432 Mc., according to W7LHL, Seattle. Ernie works crossband with W7JIP, McMinnville, Ore., a distance of 160 miles. W7JIP has a 4X150A tripler driving another as an amplifier, feeding two 15-element long Yagis. Signal variations seem to be of about the same order as on 144 Mc., and the two have never lost contact, with W7LHL listening on 432 and transmitting on 144. W7LHL has 4 15-element Yagis and a converter using 416B and 2C40 r.f. stages and a 6AN4 mixer.

W7OKV, Portland, has a 4X150A on 432 and is working W7LHL two-way, over 145 miles. There is similar fading to that found on the longer circuit to W7JIP. This was the first two-way 432-Mc. work over such a distance on 432 Mc. in that area, and Ernie says that there are still quite a few "d.c. band" men who will tell you that it can't be done!

OES Notes

W1CUT, Granby, Conn. — Enjoying 2-meter mobile with turnstile antenna similar to Dec., 1956, QST, page 13, but on bumper mount.

W1HDQ, Canton, Conn. — Heard aurora signals on mobile 50-Mc. receiver for first time night of April 18. Signals from up to 300 miles received with surprising strength on halo antenna in downtown traffic. Observed antenna heading peculiarities at home station during aurora of March 29. Worked W9EGH with fair signals on 144 Mc., when very few stations nearer were heard. Checking beam directions with great care it was found that the three most westerly stations being heard, W9EGH, W8BAX and a VE3, peaked with 24-foot Yagi straight north. Nearer stations, W4AO and several W2s, were strongest with beam slightly to west of north! This was confirmed several times in checks on various stations, and a similar condition was observed April 26. Has anyone else had this experience?

W1UHE, Tiverton, R. I. — Now using 417A converter on 220 Mc. Series trap at antenna input eliminated interference from local Channel 10 TV station. Antenna on 220 is 4 11-element Yagis, with one-wavelength spacing. Keeping 220-Mc. skeys with W1VNH and W1BXB, Sundays at 0930, W1AZK, Tuesdays at 1915, and W3LZD and W3ARW, Tuesday, Wednesday and Thursday at 2100 and 2200. Often hear weak signals from southwest, unreadable on voice. Call many CQs on c.w. but seldom any takers.

K2ITP, Riverton, N. J. — Heard 51.75-Mc. video March 29, with signal peaking from SE. Can this be explained as other than back-scatter from BBC? Adding 6AN4 g.g. amplifier with high-Q input circuit ahead of 6-meter converter improved skirt selectivity. No adverse overloading effects, and much improved rejection of offband signals. Now using 5-over-5 with $\frac{1}{2}$ wavelength spacing, but with separate feedlines. Either may be used alone, or both together. Top bay averages somewhat better than lower, and combination of two is better than the top, but large differences in these results are observed on various stations. W2TTM, South Amboy, N. J. — Trying 30-foot long Yagi on 6 in comparison with stacked array. Looking for ideas for 1296-Mc. preamp using 416B.

W4HHK, Collierville, Tenn. — Now running beacon on 50.4 Mc. whenever license can be covered. Emission is A2, about 2000 cycles.

W5DXQ, Irving, Texas — Made first 50-Mc. South American contacts with LU3DD, LU9AS and LU8EV, 1253 to 1317 March 28.

W6SOD, Torrance, Cal. — Worked 12 different stations

(Continued on page 166)

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

Howsoever:

Little Oswald, the neighborly inquisitor in our February foreword, recently caught the ham bug and bagged his own Novice ticket. Immediately after shipping out his first QSL he rushed over to announce discovery of the real answer to his pesky query, "What *is* an electromagnetic field?" Funny we never realized it before. The truth is obvious, right on your own operating table. Sure—Pegasus! See the cover of any *Call Book*.

Who but Pegasus could possibly cow the dragons of DX—QRM, QRN, QSB and empty space itself? And what but the mighty kick of Pegasus could crack the ionospheric void for those sudden unexpected DX openings on otherwise dead bands? Old Peg you will recall as the winged mount of the Muses. This checks. He doubtless hovers overhead while we muse over missing QSLs, later providing the inspiration for our next series of pleading missives to delinquent EA9s, CR5s and XW8s. His influence shows in other curious coincidences, too, such as that of rainy spells with mediocre propagation conditions. Pegasus never was a mudder.

— — — — —
My radio for Conelrad
I find to be quite vexing.
Its programs interest me so much
I've given up DXing.
— W6MUR

— — — — —
After browsing through her April *Sky and Telescope* W9HPJ's XYL snowed the OM with sunspot talk deriving from a report on a recent address by Dr. Seth B. Nicholson. That noted authority touched on interesting aspects of sunspot lore accumulated by scientific folk ever since 1801 when Sir William Herschel attempted to correlate Old Sol's fluctuating acne with tomorrow's price of wheat.

Not till around 1840 did one Heinrich Schwabe adduce the cyclic cadence of the sun's varying complexion. Now we speak of 11-year sunspot cycles. And yet over the past half century this cycle length has averaged much nearer 10 years than 11. . . . Contrary to some ham predilection, sunspot cycles are measured from minimum to minimum. . . . The peak 'spot activity of 1947 was the greatest ever recorded, and the five largest groups of sunspots ever logged date since 1945. The year 1926 saw phenomenal sunspot activity but the flurry noted during March and April of '47 was nearly 50 per cent larger (6300 million square miles, some "spots"!). . . . Yes, the pattern of past sunspot-cycle behavior suggests that our present pox peak will surpass

anything previously recorded. . . . If you hear talk of 22-year sunspot cycles don't be perturbed. This would refer mainly to a certain orderly variation in sunspot polarities.

And say, you think DX conditions were awful during the recent low-activity sunspot session of 1953 and '54? Well, if you had been a ham in colonial times you might have flipped off your wig for keeps. From the year 1676 to 1724 only about two dozen sunspots were recorded; and in the nine-year haul 1676-1684 not one single spot was observed on the sun. (No, not through fault of inferior telescopes and observers. Earlier periods of high activity were logged with much more primitive equipment.) If such an unusually barren sunspot period had coincided with preliminary investigations of short waves in the 1920s—well, you take it from there.

What:

Wow! The mailack for each June QST invariably establishes the yearly peak for receipt of unsolicited contributions to "How's DX?". Our 1956 June income was a healthy nearly-50 per cent over the June '55 draw. A salubrious sign, we concluded; DX is catching on. Now the paper dust is settling and QST's presses are cooling after their June '57 run. What's the score? Ring up a *plus-50* per cent increase in "How's" mail response over June of last year! It's no secret that you gentle readers write these DX pages—nice going! You're using your allotted space in our ARRL organ in the manner it was meant to be used, and to the hilt. Keep it up! Like this, we mean. . . .

20 c.w.'s army of deponents leaves scant doubt that the 14-Mc. band reigns supreme in this summer's DX festivities. From communiqués and dispatches incoming from all W/K call areas and points abroad we note, first at WIAPA: HH3DL, KR6SC, W7BPW: CR6DA (14.062) 2200 GMT, EA9BK (40) 21, FM7WR (100) 12, HSBSE (38) 4, IS1MM (8) 22, MP4BBA (5) 23, VP2LU (80) 2,



*4822 West Berteau Avenue, Chicago 41, Ill.

UOSCA (10) 21, UR2AK (35) 20, chorlton "What a difference from my old c.e. 50-watter; the new v.Lo. 125-watter really pays off!" W1DBA: CR8s 6FC (40) 21, 7MB (20) 23, CT2BO (10) 0, EA0AD (20) 23, HK3JC (30) 3, LZ1KBL (60) 3, OA1Q (10) 8, SP7s CN HX 21-3, UAs 1KAK3KUA, UO2AH (65) 21, VP3AD (80) 3, VR3B (35) 3, YOs 6XV 8EL, 4X4JT (65) 0, 954BW (55) 22, now has new Valiant and 105 worked. W1DFY: to 82 with CT3AB, ET2RH, LX1FL, PJ2ME, one TA3KW, VP5BH, ZC4IP, ZP9AY, 9S4CM, W1MAAN: now 109/90 via EL28 (30) 22, TF-2WBM (40) 16, YU1OZ (90) 21, FM7, on 75-watt 807, W1WKF: DU7SV (80) 13, KG6IG (30) 17, VP4MM, VS2s DW FN, CR3 VR3, 2F2CVH: KG1FA, TF3KG, HH, W2DEB: BV1US, CE9AQ, DU1RTI, EA6 6AF 6AZ, FK8AL, FO8AF, OH2AA, UAs KCC KCE, UA0A KCA KJA KKB KSA, UD6s AI DD, UF6AC, UL7BA, UO5AA,



At his receiving position one of the ops of UA0KAD appears to have just nailed his first Utah Seven. UA0KAD runs 200 watts, receives with a 16-tube superhet and radiates with dipoles, mostly 20 c.w. (Photo via W1ICP and W9RBI)

UP2AS, VR2DA, VU2s JG KL, ZB2A, ZK1AU, ZS3Q, now drives a pair of J.E. RK-65s with his 32V-1. W2DGH: FG7XD (50) 22, HH2CL (10) 11, KJ2SA (17) 10, KH9CW/KW6 (90) 11, KM6AX (38) 12, KR6QW (35) 12, LU6 1ZS 3ZI 5ZI, PZ1AP (50) 0, Y08MS, 3V8AO (22) 23, 4X4BX (75) 5, DU HI VR3, W2HJM: CE9AS (52) 0, LU2ZS (24) 1, MP4BBE (58) 2-3, SV0s WD of Crete, WP (W3JTC keying), TG9MR (30) 3, VP8CI (29) 0, VR2AS, VS9AG (19) 0, one YB3AA (60) 20-21, now at 243 stalking AC3 AC5 CR10 ZS8, W2ACI: CN8FD, DM2AK3 HK3AE (32) 1, KC4USH (76) 1-2, OYIR (3) 20, SPs 1KAA 9KAS, U8KAA (81) 3, UPOL6 (29) 3, VP5 5RG 5WS8AO (34) 1, 8BS (84) 1, VQ6LQ (74) 21, YV5ES (10) 1, YSIO (9) 1, ZB2R (52) 12-13, ZE1s JQ (26) 20, JV (25) 1, 487WP (27) 11, 4X4II (24) 0, HA HI VP2 VR3 984, K2GFO: FL8AB, OHINA 0, ZC5RF (56-74) 12, hears ZCSJM (40) 12, has a 217/201 record. K2LHB: CT1CO, YV5HL, 4X4HK, CT2 EA6 SV0 Caymans VP5, K2MW K: KV4AA (80) 21-0, XF1A, K2QBW: EA6 6AW (50) 22, 9DF (80) 20, FP8AP (78) 13, KC4USB (51) 3, OX3CP (80) 22, TI2PZ (80) 1, UA3KAN, UB5KB, ZB1BQ (80) 22, ZD3A (50) 21, ZC4BN (78) 22, 3V8AG (50) 22, BV1 FY7 III, up to No. 67 on c.e. 50-watter and dipole, K2QXG: FK8AS (70) 10, XZ2SM heard (20) 13, 3WSAA likewise (75) 10 still on FCC-ITU Ban List, K2UOY: CX2CO 1, W5RPG: HH2RM, EA6 FK8, W4A UL: UC2CB (9) 7, UO2AB (42) 20-21, YAIAM (5) 1, Rio de Oro EA9, Sint Maarten PJ2, W4EJP: heard CX1BO, JA3DY, W4GIM: 5A2TY, W4NBV: FB8CC, JA0BR, U8KAA (47) 13-14, VSs IHC 6CO, VU2MR, ZD9AC of Tristan, ZL5AA (19) 12, now 190/190, K2DAS: CN8UX, F8RJI, VS8PB, VP5 2LH 9VV, K84 PJ2, K4DRO: VK6DJ, antarctic LU, K4HNA: VR2AK, VQ6, Caymans, W5FTP: KC6JC VR3, K5BXG: XE1MB, UO2AX, K5DGI: CR9AH, EA9AP, FK8AO, GC2FZC, K6GAS, KR6SF, VR3 3V8 487, Sint Maarten, hits 123/90, W6CIS: FG7XE, FO8AM, HK5CR, ZK1BC, OH0984, made it 201 postwar, now tries for a QRP "DXCC" with 75 watts and 30-ft. vertical, W6KG: jaxpot job on CRs 6AI 6CS 7CI, FASTT, HA5AL (30) 4-5, OQ5GU (91) 4, UA4IF, UB5KB (45) 6, UC2-KAB (70) 6, UR2KAA (48) 7-8, arctic USFA (57) 15, VSs IGX (18) 13, 6DN (18) 16, ZBs ICY 2I (110) 8, ZC4s IP (95) 4, VP (90) 5-6, ZC5AL (17) 13, one ZD7AH, ZE1JN (10) 5, DU FK8 KC4 LX PJ2M SP U8 UQZ VQ6 V82 487 984, W6ZNY: HS1WB, OH9 VQ6 XL, K2CFE: YL CR7LU 17, EA8BF 2, F7Y7 2, PJ2AN 0, SV0WR 1I, UO2KA 4, UR2AO 5, VK9XK 8, VP6GT 1, VS6AE 14, Y03FT 16, BV1 EA6 HI UA0 V82 ZC4, now 136/76, K6EAF: JA8AA, antarctic UA1KAE, VSIGL, V86 ZC5, K6GLC: SPs 6BY 8CK, TF3AB, UA5 IKAC IKAG 0KFE, VQZGW, VK9AU, ZEs 5JA 6JX, 4X4CJ, CR6 CR7 CR9 FK8 KC4, K6HFA:

DULs AQ (20) 9, OR (45) 17, JAs 1AB 4CF, KG1s AP (40) 4, AX (105) 1, KW6CM (50) 4, LZ1KBN (50) 6, OA4BP (10) 8, OE6DK (40) 7, UAs 4KYA (95) 6, 0KFG (90) 6, UB5KBR (80) 4, WNTJ/KC6 (110) 16, FK8 KC6 VK9 V81 V86 for 90/72, K6RYH: KR6SS 16, PJ2AV 1, SP6BZ 6-7, UA0KSA 15, UBSUW 7, UL7AB 3, UO2s AK AN 5-6, 5A3TL 7, U8 V81 V82, K6LVT: CE3s 20, 8BT3, 9AI 9AK 2, LU2ZS UA0, builds cube quad, K6SRZ: CESAA, DM2ACA, JAIYN, SP on c.e. 65-watter, W7DJ U: JAIAs HP QI, JA0FZ/JAI, UA3KYA, antarctic UA1, VR3, W7WFD: to 67 on GD3UB, HH2Y, UB5UB, CR9 UA1 UR2, W7YQA: DU1CP (90) 15, JAIAGU, KA5MK (70) 7, KC6AK 50, KR6BE (15) 13, UL7GN (40) 15, VK9, W781A: OK3EE, VP7NM, VU1DP, HH KV4 VP5, W3MLX: Sint Maarten, W3NOH: 9S4AZ (12) 17, W3QXW: CR6CK (40) 19, FO8s AD (320) who announces longitude and latitude of FO8AP/MM (330) 5-6 aboard Tahiti-Nui at 0530 GMT, ZC4CH (40) 4, KC4 TI9 UQ2 UR2, Grahamland VP8, 984, W9PNE: up to 147 via VK9 VP2, K9DJQ: TI2WR, XE1AX, YV4AU, CX KV4 MP4 VP5, W9FWF: found new beam and p.p. 701-As good for JAs 1QI 3TT, LU4ZD, UAs 1RF 6KOD 9WA, UB5KMA, VQ4BC, XE1NJ, HI HK KR6 UA0, K6ASs: HC1E, UA1, now passing half-DXCC mark, KLTBP/K: JAs, KA5CY: SP3DG, UAs 4KYA 9DX 9KHA 9GQ 9VA, UB5DW, ZC5, VE1PQ: JAZJW, KH6AIK/KG6 (80) 11, UA6CJ (50) 11, CR6 FK8 VP2 VP5 487 4X4.

20 phone levels off for a hot summer run and recent results are noteworthy at W1APA: multibandman DU7SV (160) 8, HC3 2BH 5PW, KA2KC (181) 9, KC4s USA (281) 9, USN (270) 10, KG6s AAY FAE, TF2WBM, VE8s MB WR, VP2DJ, W1PVR: KM6AX (240) 10, W4DZC: CRs 4AP 5SP, ET2US, FB8ZZ, FK8AS, KR6SS, MIB, ODSBZ, New Guinea's K6YKT, VR2CX, K44IK, TI9 ZD4, W2HJM: advises that VP3AD (112) is available, K2QGG: CR6CX, F9RY/FC (173), CR5 TI9, K2STJ: CN8s HS JA, VPIAB/m, numerous European and Oceanians on flea power for 14-Mc. phone (20 watts), W4YIC: the a.s.b. of ZD4BF, W4USQ: W4DQA/KS4, K4DAS: HH2Y, VP5 IRL 5AK, K2DPT: KG6 on 50 watts, K4HNA: VU2BK, W5FTP: ZD6DT, K2BEG: K6GAG, HR4WH, VY5AB, W6ZEN: VP5BH of the Caymans, JZ0PC of Biak Isle, N.N.G. K6DUY: curious HI0TC, K6GLC: BV1US, HSIA, VRs 3F 6AC, VSs IGZ 2DW 2EK ZGL 6DJ, ZS81, ZD6, W7PHO: C3MH of Red China, ZC5RF, reached lofty 237/208 status, W8NOH: CN2AK 22, CN8FV 2, ET3RL (179) 2, TF2WBU 1, VP2 4s Lee-wards, W9RBI: SV0WE (195) 2, VK9AJ (140) 14, ZD4CB (92) 7, Pitcairn Island, W0ZSZ: CN2BK, JA1MP, KR6s GT RB, H18BE, OK1MB, PJ2AX, VP4KL, VR6TC,



Y03GM is thoroughly worked on c.w. and phone by the North American crowd. Those BC-221s certainly get around! (Photo via W9WHM)

ZS9G, 4X4DR, FK8 VP5 ZD4, reports Easter Isle's CE0AC available around (175), made it 100/79 on 14-Mc. phone within a year, K43CY: gives the Oriental 20-meter A3 angle with FA91B, HS1MQ, OA5G, SP5HH, U8KAA, UA0KCA.

15 S.C. is the next stop for your "How's" Bandwagon and first we'll visit with W1ANU: SP2CX, many Europeans, U43DQ/M claiming proximity to the Canaries, W1CTW: ET2RH, F8AJ, IS1MM, OD5LX, YAIAM, VP5 to reach 125 on 21-Mc. c.w. W1MLG: EA6 6AF 20, 8BF (70) 1, 9AP (20) 21, H18BE (80) 3, KX6ZB (20) 3, UA9KYB (70) 16, VQ4CC (100) 22, ZB1HKO (30) 21, ZE5JA (50-100) 21, ZP9AY (80) 12, VP5, now 82 worked with attic ground-plane, W2CVW: UA3CT, W2GJD:

CR9AH, FKAL, SVIAB, TA3EW, UP2AS, UR2s AM AR, VK9AJ on Direction Line, Cocco-Keeling group, VS6-DN, ZC4IP, K2GMF; PJ2ME, XFIA, K2LHB; CN2AQ, SPIKAA, 9S4CH, UP2, K2MFW; HA5BW, OKs 2KBE 3DG, PJ2AJ, VP7NM, YUIFC, SP SVI, K2QBW; G2DFXN (74) 21, one HZIKC (80) 0, OA4FA (80) 22, PJ2AN (75) 14, UB5CI (75) 14, XE2FL (60) 21, YQ2KAB (72) 15, ZE3JJ (65) 19, K2TCD; OKIKTI, YU2IN, UP2 ZC4, W3EVC; good huntin' for CN8AS, FAs 8IH 8RJ 9VN, F08AK, HA5AB, KG1KK, PJ2AV, OQ5GU, OD5LX, SV0WP, TFs 3KG 5TP, VK9XK, VPs 6UN 9CY, VEs 8AB 9NE, VQs 2GW 6LQ, WIUBW/VEs on Baffin, WP4AIU, ZE2JS, 4X4s IB IO, F8, F87 HI ZBI ZP9 on Globe Scout and 3-el. Mosley, W4C8Q, HA5BI, JAs IADN 5AF, VS6DN, VQs K4DAS, Q37L, K2DRO; heard VU2RM, K4HNA: SV TF, W5TTP; EA6 EA8 EA9 FKs, VP2LU, K3BNG; XEs 1A 1PJ, VK9 of New Guinea, W6KG; CE3s AG ZD, CX2FD, DU7SV (100) 6, KW6CA (20) 5, UA0KKB (30) 0, W6RZS; CR7BS, FP8AP, FY7YE, 4X4BX, CN2 CR9 FKs VK9 ZE, Caymans, W6ZZ; F08AG, JAs IACB 3HD, KH6AIK/KG6, LA2B, UA-KOB, G3FYR/V59; CR9 OQ TF VP, flocks of Euros and additional Oceanians, hit 132nd 15-meter country, now has QSOd over 1400 Gs, is 167/158 for all bands. K4LEB: HH2DX, JAs 3GX 4JU, VP9DD, CR9 UA9, Sint Maarten, W7DJU; JAs 1VX 3AF 3BB, CE OH PJ2 VP2 VP3 VP7, W7YUQ; JAs 1AFF 7AU, OA4FU, OQ6DK, SP5AB, UA0KF, UC2CB (10) 15, VQsAB (100) 21, VS6CG (18) 3, WG6AGY (10) 16, YU2F/YU3, 4X4FQ (80) 15 for 89/64, W5CNL; YU4NZ, YV5HL, heard UQ2KAB, now at half-DXCC mark. W8CSK: Caymans VP5, W8GKB; VU2RM (20) 18, W8IBX; OH2AA/OH0, CX EA8 EA9 HH HI SP TF, Caymans, made it 65/39, W5YGR; making comeback on CN8JX, YU4PI (20), CX UP2 VK9, Caymans, heard K4CUSV, ZLSAA, is striving for 110, CR9 OQ TF VP, flocks of CM8EM for first DX, is W8IBX's OM, K8AXL; KL7-WAF, K8BPX; that ZD7ET guy, PJ2 SV TF 4X4, Caymans, W9MAK; YV5BZ, VP2 VP5, W9PNE; CR9 F87 HI, KOARS; WL7BWY, W9AHS, HH VQ3, K0DQI; CTs 1CO 3AB, JA1CO, LU2ZS, OE3AS, OK1XQ, YU3 3AV 3EO, F87 SP, now 50/27, KL7CAW; VQ4GP (90) 20, KGL1, YU2HF (90) 15, EA6 FA KGL1 OH9 VP5 ZC4, KL7BKJ; K43CY.

15 phone brought Country No. 63 to W1ANU: HH2RM 19, KA2YA 16, KA4USA 3, VPs 5BH 7NB 23, VQ4EO 5, ZE2KR 21. W1PNR: Caymans VP5, W1YNP; T.N.G.'s VK9HO, W2DEC; HZ1AB's a.s.b. KWS-1, K6AXS/KG6, VP2LU, K2MWF; TG9WB, 4X4GB, K3QQQ; CR4AS (247), LX1DC (235), VP3 3HAG (230), 8BT (180), VR2BC (210), ZB2 (220), 4SYGE (235), now 96 on phone, 101 all told. K2DRO: EL2D (240) 15, HHs 2DB (240) 18, 7OR (290) 11, OD5AV (180) 11, SV1AE (230) 2, VP4KL, 53/26 in four months. W3DDV: egged on by W4VYP, made comeback after layoff to reach 100 on F08HG, KG1FR, UQ2AN, 5A5TM, W3EVC; VP1EE, K4DRO; HK3AB, HP3FL, PJ2AO, enough KZ5s to qualify for KZ5-25 wallpaper, K4HNA: EL5A, H18BE, Zde 4CH 6RM, 4X4F, FQ8L, W3EVC, W3EVC, VP5CP, VQ5FS, FQ8 LX1 VK9 VP1 ZD4 ZD6 5A, W5FTF.

This is it, gang—the first "DXCC"™ called to our attention (see p. 59, April 1977). W6KG turned the trick while signing DL4ZC. To save wear and tear on your QST-spinning Lary Susan here's the line-up of Lloyd's 100 DXCC-member QSLs from 100 ARRL DXCC Countries: CE3AG, CN8MM, CO2WD, CP5EK, CRs 6BX 7AF, CTs 1JS 3AV, CX6AD, DL7AH, DU7SV, EA5, 4CR 8AX 9AP 9DF, E15F, ET2US, F9RM, FA8DA, FE8AB, FF8AG, F08AP, FR7ZA, G6ZO, GC2FZC, G13AXI, GM6MD, GW5FN, HA5KBA, HB9CS, HC2JK, HK3PC, HP1BR, HZ1HZ, I1XK, I1BNU, IS1AHK, JA6AO, KGs 4AF 6DI, KH6IJ, K1LPI, KP4KD, KT1UC, KV4AA, KZ5DG, LA6U, LU9CK, MP4KAC, OD5BA, OE1FF, OH2RY, OK1HI, ON4CY, OQ5RA, OX3MG, OY7ML, OZ7BC, P20HG, PJ2AA, PK4KS, PY2NX, PZ1AH, SM5WL, SU1AS, SV0WT, TA3AA, TF3SF, TI2HP, VE7ZM, VK3JE, VPs 5DC 6CJ 7NM 900, VQs 2GW 3HJP 4E1 5EK 8AD 8CB, VSs 1FK 6CC, VU2MD, W6DZZ, XE1AC, Y2AM, YS10, YU3AB, YV5FL, ZC4IP, ZD5E, 2DCP 6BX, ZE3JP, ZL1AH, ZSs 2X 3AB, 4S7G, 4X4RE and 984AX. W6KG holds DXCC membership for work as JA2KG, DL4ZC, W4KE, and applied for his California certification after only seven weeks of action. Lloyd writes, "My QSL collection numbers nearly 30,000 QSLs, all arranged alphabetically in file cabinets in such a manner that I can pick out any card without leaving my operating chair." It would seem difficult to dream up a Worked-All-Anything that W6KG can't document! Anybody else out there got DXCC-DXCC?

ZS9G, F87 HI VP2, K5BXG; CO2USA, W6ZEN; VP4LF, HI, W6ZZ; KA3WG, K6GAGS, KH6s galore, KL7s likewise, KX6s BQ ZB, PJ2AV, VP9CY, ZL1AM, K6ICs: OA5H, W8GKB; K4CUSN (410) 0 at the geographic pole, W4DQA/K54 1, W8NOH; VP7BN 17, ZP5JP 17, K8-BPX; HC2BH, ZD6DT, W9BEK; 103/89, H5IMQ, JZ8BP, ZD1FG, W9BBE; RV1US (220) 15, K4CUSV (370 a.s.b.), 4, VK9YT 14, VSs 2DB (150) 15-16, 4JT (215) 14-15, ZC4IP (165) 16, W9JDJ; made it 63 on HC2TR, HR3HH, KG1FR, VPs 1SD 6BS 6WR, W0QGI; F8BZZ (140) for No. 127 on phone, 185 over all. K0DQI; VP9L, K43CY; HS1B, VSs 2DQ 6CO, ZB1HMQ to reach 98/71.

15 Novice happenings slacken to summer tempo but KN4JFE reached the 80-country mark via CN2AQ, CT3AB, FM7WD, IS1FIC, LZ1KDP, UA6KTB, UR2AM, VQs 6AB 8CB, VS6DN, VU2RM, XZ20M, one of those ZA1BA and OHs. Can he make it? Here and there, first W1APU's lad, W1LPLD; OH0RD, OK1KAM, VK7LZ, YU6QL, 9S4CM, uses DX-20, W1NWK; CN8-JP, Europeans, KN2UP; climbed to the 40th plateau, DM2ACM, FASRJ, HA5BW, JA1ADN, OE9 1HV 58D, OKs 1KDR 3DG, PY7AN, SP5KAB, TF3KG, UA3DQ/MN, UP2AS, VK3QL, WH6CCJ, YU3 2IN 30V, ZL-1APM, ZSs 2BC 6AAO, 4X4s CK DP, CN2 CT3 984, has DX-35, 8-85, 3-el. spinner, KN3YIZ, HC1FS, HP0BG, OK3BE, OZ2N, SP1KAA, T1EEA, VP2AD, WL2BIA, CT on 50 watts and dipole, KN2VAC; LA4K, SP5GN, YU-3FK, more Euros, K4JWZ; CR9AH, KG1KK, KA2JW, SV0WP, UA4FE, VK9XK, VQs 4CC 6AB, VS1DU, YU-3FO, ZEGJX, ZP9AY, 4X4IB, CT3 UP2 984 with DX-100, SX71 rotary pickup, has 56 worked on all continents. KN5ESV; KPA4C; DL, KN5RZM; CN8JX, 1ACA 1ADN 4JU 8AL LU5FAV, UA0KFG of Sakhalin, VKs ZLs, employs DX-35, SX-99, ground-plane, KN9DKF; CR6CS, FK8AL, KG1KK, LA5B, OQ5GU, XFIA, ZE6JX, ZP9AP, PY VK ZL, 31 countries snagged. KN6GRS; KPA4BA, KN0KL; nine countries on three continents.

10 phone plays a fleeting game these balmy days and the flock trends toward 15 or 20. Short skip keeps the ball rolling, though, and Pegasus kicks in with a DX opening or two when least expected. Down the list of reports from random points, first W1EUK; CT2AH, EAs 6AS 9AZ, KX6AF, KR6AF, OE6PF, SV0WJ, TF2WBQ, VQ5AC, ZC6UNJ at the U.N. Govt. House, Jerusalem, ZD1FG, SA2TB, TI9 VP5, still chases ZDs 3BFC 8SC, heard CT3AL, OX1R, ZD2PNX, finally obtained his FG7XA QSL via CO2BK, K2PSV; CN8HM, CR6BH, CX3AA, YQ3VI, 4X4DR on DX-100 and dipole, K5QXG; CN2WH (300) 11, K2UOY; VP8 1SD 8AQ, ZS, W4YBG; HC2BH, HH2DB, KB6BC, UB5UW, VP2LU, VP2BC, YQ3VA, VP1 VKs, now 68 worked on 10 A3, K4DAS; good catch in such as CN8JX, GB2SM (just England), GC2RS, HC1FK, OQ5AU (400), VQ3ES, VP4LF, W4KAT, YS2AG, K4HNA; CR7DS, ZS, Cocos Island, W5ERY; EA8BV, JZ6PC, OD5AV, SV0WT, ZD3BFC, 4X4s BD FV, both St. Martins, heard EA9HE, W5EYH; KA3CY, VK9s BS DB, VP5 4LT 7BO, ZD6DT, ZE2KR, ZP5EC, says "B8 DB and VKs have been sounding like locals!" W5WXP/S; KM6AX, KW6CB, TF2WBQ, KX6 SV0, K6ILN; FK8AL, UA1KFA, YQ3KBC, ZB2I, SA1TE, W6ZEN; K6BIM; RV1US, EA5H, CR4AS, PJ2CF, ZK1BS, W8NOH; CX1AK, HH2RM, VP5DS of Turks, 5A5TL (400) 12-13, K8BPX; CN8UE, CXs in number, HK3AB, HR2GH, KG1FA, LA8J, OE5CK, OQ5RU, OK1MB, TI2OE, ZD4BR, VP2 VP5 YN ZL ZS, W9BEK; CR7BB, JZ8BF, 4X4CW, VR2 W9WDN; Caymans, VP5, W9JTF; CN8FM, GD0YS, HH3TJ, OEs 2WR 5HE, VP5, W0QGI; FY7YE, K0BIB (at mile of WIAF); CT1PK, ELIC, GDs 2FRV 3FXN, KA2KS, OD5AC, OH1RU, UC2KAB, VP1OLY, YV5AB, SA2TF, KM6AX, KL7BPk, K43CY; CR9AK, DU7SV, VSs 2CR 4JT.

10 c.w. still attracts VE1PQ; IS1MM (70) 14, OQ5GU (60) 14, UB5KAB (40) 14, VQ2GW (90) 18, ZE3JP (10) 18, 3V8FA (15) 18, W6VWZ; ZC4IP, K3GMP; UC2KAB, ZE3JO (80), W3HGP; CT3AB, EAs 6AF 8BF,



JAI1VX, KW6CA, TA3KW, UB5CI, VK9XX, YO3s GY RF, ZP5s AY EC, 4X4IB on Viking II and homespun 3-el. beam. *W3UDO*: XF1A, *W4USQ*: KL7FAH, *K4APU*: 4X4BX, *K4DAS*: LZ1KAC, SV1AB (50), *ZD3A* (100), *ZP9AY* (50), *9S4CM* (200), 4X4, *K4HNA*: FA8RI, ZC4JU, 4X4FR, UC2 ZE, *W5FTT*: FK8AL, PJ2ME, VP2LU, YS1AA, EA6, *K5BXG*: VP2 VP5, *K5DZF*: LZ1WD, OQ5GU, OX3LD, T12EA, UA3AA, *W6KG*: CR6CI (65), 18, OA4BR (57), 18, OE3ED (68), 15, OKs 1MB 3DG, VO2GW (50), 14, YV5BJ (60), 23, ZE5JA (65), 14, FKs KG1SW, PJ2 UC2 VP2, YO YS, *K6BHM*: CR6AI, HA5BI, UC2AA, Jamaican VP5CP, VO4KPB, FK8 SV VP2, *W7DJU*: Euros, *K83YS*, *W8CSK*: EI9J, Europeans in number, *VP7NM*, Caymans VP5, *W8IBX*: EA6, many other Euros, *K8BPX*: HH3DL, JA3AB, PJ2s AJ AN AV, LZ1KIDP, VK2s FU GW, EA6 KW6, Sint Maarten, *W8NOH*: KOABM KG6 (90), 18, FK8AH (28), 11, *W3AUN*: CN3 (77), 16, CR9AH (113), 23, CTICO (184), 17, DU6IV (96), 1, DM2AEG (80), 17, JA1ACA 3BB BAQ all 0-1, OA4BP (132), 13, OKs AEH VB, YUIFC (50), 13, EA6 FK8 SV YK9 ZE 984 for a sharp rise to 82/40, *W9YF*: SP6CB, VO3ZA, YU3EU, 954AX.

40 c.w. DX in the summer is mined deep-shaft fashion in contrast to winter's handy open-pit operations. Or one can pan a bit here and there along the stream. Anyway, we find at *W1APA*: UB5s KBA UB, *W1BFW*: persistent and case "T19AA", *W2JL*: EA6, XF1A during 2 a.m. bottlings and burping of new jr. op., assures that 40-meter specialist *XE1KD* QSLs 100 per cent. *K6GMF*: VP7NM, just-in-time II/Trieste, *K2LHB*: old 7-Mc. stalwart *G5IL*, *K8QBW*: UZ2KAD (38), 21, YU2ACD (40), 1, *W3FWZ*: novel Novice *WP4AIT*, *W3WFG*: CT2BO, RHJZ, LZ2KML, OY7ML, SP5KAB, UB5s KBB KBR, UC2KAB, UY2AG, VP3YG, 28, all 1-5, *W4EJF*: YU5FOJ (30), answered Gerald's "CQ DEL", *KDAS*: EAICP, YU2GAB, HB, *K4HIG*: HK4BQ, *W6KG*: FK8AL (16), 13, JA1BU (6), 14, OA4TF (25), *VP6AF* (30), 11, PYs VP7 VK, *K6EAT*: JA1 IBAE 10E 20F 3XY 7GW, *K6HFA*: JA3BN (15), 15, UA6JE (1), 15, *K6LVT*: CE3AGs, HH3DL, 7, JA6 6FB 9GD, PJ2AJ, ZL, *K6SRZ*: JA1 IEF 2A 2FN 3ZF 3ZU, *W7DLU*: JA1 IAE0 IAZX 2BP, *K6GUSH*, YKs ZL, *W3CNC*, HH2s JB LR, *W8IBX*, VP2LU, HH, *W0WYJ*: LU PY KH6, EA4BU, *VE1PQ*: CT3AB, EA6 6AF 9AP (30-40), 1-2, LZ1UR (40), 2, *VP5BH*, CT2 UB5, *K4SCY*: local JA1s 2MR 20W 2UW 3GC 3VD 9FO 9ZA.

..... Novice on 40 WNL1XC captured *VP5BH* and *WH6CEA*, while KN6GRX nabbed a KP4. Phone-wise W1APA scored with 7-Mc. voices *FP8AP*, JA7GW (97), 11, OK1MB, *VPs* 3HAG and 7BN.

80 c.w. keeps alive with echoes of the '57 ARRL DX Test in this month's mailbag but the immediate future is obscured in QRN. At any rate, we note at *W1BFW*: VK3NR (3) 11, *W2IGW*: KZ5KK (20), 4, PJ2ME (2), 1, ZL1CI (18), 11, *W3HGP*: PA0RE, XF1A, Caymans, *W4EJF*: clicked with OK1KJ (20), 4 and other Europeans, *KDAS*: roving salt SM8CZH, *K4ELG*: KG1BC (30), 4, Gs, *W6CIS*: CE3AG, *W6KG*: JA3BB (12), 11-12, *K6FJT*: KL7s AIZ FM WAF, *K6SRZ*: YL W7BXW also 75-meter phoned with *KL7BZM*, *VE1PQ*: EA1AB, EI9J, OK1KI, PJ2AV, *VP6GT*.

160 c.w. was the scene of a late-season coup by W1BB. Stew two-wayed with TG9AD and ZBHKO in late February for a pair of notable 1.8-Mc. firsts. W1BB now is vacationing in Europe, possibly visiting with ops at the far ends of the many transatlantic QSOs he scored during the 1956-'57 160-meter band. W9PNE and KH6L have QSOed on seven bands 1.8 through 28 Mc. and have 50-Mc. schedules afoot.

... And so endeth our activity report for the greatest amateur radio DX season in history. You can tell your Novice grandchildren about this one! Yes, in early 1957 more DX stations were worked by more W/K/VE/VO stations than in any comparable period heretofore. And we're optimistic enough to be sure that we've only scratched the surface. Aim those beams!

Where:

Asia — Regarding AC3SQ confirmations W9KOK, long

a confidant of lonesome AC brethren, advises: "Received Saja's log for 1956 and as soon as possible will QSL everyone who QSLd AC3SQ and who hasn't yet received his card. If possible, you'll have the BV1US gas detector QSL matters on even keel by using the most expeditious of two addresses when shipping your cards. The station operates from two separate locations under its one call: Taipei, North Taiwan (Army Section, MAAG, Taiwan, APO 63, San Francisco); and Kaohsiung (Feng Shan), South Taiwan (Army Section, 8FAAT, MAAG, Taiwan, APO 63, San Francisco). The trick of course is to determine which outfit you're QSOing. Evidently the signing of differentiated calls would spoil the fun. From 487GE, now heading back home: "I have tried to QSL 100 per cent, getting rid of about 3000 cards in the process via bureaus or direct. So anyone who hasn't received his card from 'GE' will just have to hold his horses and one will be sending the package in the near future. To return, I am safe in saying that the W/K boys win hands down. Gs come next at a very close second. W4GIM's card to YI2OT bounced back stamped "unlicensed station." Ops Abe and Zeke of KA2MA apologize for tardy QSLs. With new stock on hand their backlog is fast disappearing. "CS3MH is in southeast China and cannot QSL the end of this year. He runs 10 stations to an 807 and dipole, modulating with a 6L6. This hint courtesy W7PHO. Via W1VG, V89AG invites QSL inquiries concerning his previous activity as ST2NG and ET2NG. Pete also is informed by ET2RH that ET2US is a 100-per-center. Whoops, we're getting into

Africa — NNRC confirms the passing of CR5AA. CR5AC, Armando's brother-in-law, is tackling outstanding CR5AA QSL matters. SUHC writes to report considerable spurious "SU" activity in progress, resulting in Charny's receipt of numerous undeliverable QSLs. SU1s AS (phone) and IM assist SU1C in supplying bona fide Egyptian contacts.

Oceania — ZL5s AA AB and AC will QSL through NZABT in 1958 according to W7FBD and others. WNTM/KG6 has QSLed 100 per cent since last October but some of the cards have gone astray. Anyone who hasn't received my QSL in about six weeks after QSO please send a post card and I'll QSL again via air; but check the bureau's first. From ex-PK1DA, an old favorite among Yank DXers: "I now have settled in the Netherlands as PA8FM and managed to still all my PK4DA logs for 1948 through '51. So I can still satisfy my brethren desiring elusive PK4 cards." And the ham outlook for Indonesia is as dismal as ever.

Europe — Our Iceland gang continues to savor ham radio far from home. TF2WBQ lists current activity by TF2s WBG (W3ES), WBJ (W5JB), WBK (K2GYD), WBL (W1UDL), WBM (K2HF), WBN (W1YAD), WBO (W3DKF), WBY (W5GDL), WBR (W0PI), WBS (K2GTP), WBT (K2YDY), WBU (W2FGD) and WOK (W8OK). TF2s WBL WBN WBR and WBU are civvies, TF2s WBG WBO and WBT are Navy men, and the remainder are USAF constituents. All TF2-bound QSLs can go via APO 81, New York, N. Y. DL4 suffixes still suffer the old shell-game treatment. W3AZZ operated as DL4R until June of last year, and his brother another had inherited the label. W3AZZ naturally is bombarded by misdirected QSLs; the current DL4PR's address follows. A plea to all licensing authorities: no re-issuing of call suffixes until three years have passed. And what's the matter with three-letter suffixes? Assigning DL4 three-letter calls, for instance, right on down the alphabet would assure absence of QSL-address ambiguity and mistaken identity for years to come. W9CFT's files reveal a YO2 QSL bureau at P.O. Box 100, Timisoara, Roumania; also a DM QSL bureau at P.O. Box 666, Halle, Saale, East Germany. So far as we know DARC of West Germany still welcomes DM-destined pasteboards for relay across the border.

Hereabouts — The mystery of KL7PI's pirated call is solved and the plot wasn't so sinister after all. KL7PIV clears it up: "It seems that during recent DX contests quite a few W/Ks left the 'V' off my call and sent the cards to Joe. I haven't yet figured out what people think that 'V' stands for if it isn't part of my call!" This episode adds more evidence to the pile of proof dictating the necessity of careful primary certification. Ed had good reason to sign KL7PIV; he's ex-W1PIV. From K4HOI: "I will be handling all QSLs for VP5DS on Turks, and all previous QTHs should be disregarded. QSLs will be sent via bureaus, or sent direct only if self-addressed

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HH2Y was visited by W2GKP (standing) during the latter's recent Caribbean tour. Armand's Port-au-Prince radiotelephone is widely worked on DX bands and, because so few HHs try c.w., the quickest route to a Haitian QSL continues to be vocal.

QST for



Polish amateurs recently played gracious host to visiting CCIR conferees in Warsaw. Among this gay group you may recognize ex-SP1CM, SP2BE, SP5a AA AH AL AM AR BL BP CF EL FD FM, SP6BW, SP9a DH KJ, DM2AEO, OK1GM, W4CXA and W0JJN. (Photo via W1NS and W1HDQ)



stamped envelopes are received. VP5DS promises QSLs card for card. Another mess apparently caused by fast call-suffix reassignment, this documented by W2WHB (ex-KG1AX): "Would appreciate it if you would include a note that QSLs for KG1AX QSOs in 1967 are not mine. They should be sent to the KGI bureau. The call appears to have been reassigned to somebody named Bob." What a system! From HI8BE: "The first evening after my license came through one 15-second CQ brought enough replies to fill five log-book pages. I finally had to quit at three a.m. with just as many callers on the frequency than as there had been several hours earlier. I appreciate self-addressed envelopes and postal reply coupons - keep them coming - but don't send stamped envelopes. I must use Dominican Republic stamps, of course. I'll be here for about three years, so have patience, all!" G5RV, based at Caracas for the past two years, has a job which involves extensive travel in Latin America and the Caribbean. He operates from time to time under various VP calls using his RV suffix, and also as G5RV/PJ2. Louis QSLs 100-per and will receive mail addressed to him at Apartado 3443, Caracas, Venezuela. WGDXC's DX Bulletin reports that W4DQA/KS4's stock of 200 QSLs disappeared in no time. Smitty is to remain on Swan through next month, prefers 20-meter A1 and A3 work at 0200-0400 GMT, and requests stamped self-addressed envelopes be sent with cards to his home address. W1s APA BIH CTW MAN RDV UED VG WPR YNP ZDP, W2s DEC DGW HMJ JBL PTD, K2s GFQ QQQ TCD, W3s AXT AZZ MVQ RFG, W4s IYC USQ, K4s HNA LPW, W5FTF, K5s BXG DZF, W6KG, K6GLC, W7s FBD PHO YAQ, W8s CSK NGO NOH KXW TIZ YGR, W9s BEK CFT FBIJW GCI, KL7CAW, ISWL, JDRC, MARTS, NCDXC, NNRC,



XW8AC, among the more DXotic Asian catches, now finishes up his second year in Laos. He writes, "The life here is hard. Vientiane is a little town without comforts and accommodations, and the weather is no good also (hot)!" You'll make out Lucien's receiver and transmitter as venerable war-surplus items, a BC-348 and ART-13. (Photo via W7PHO)

QVARA, 8CDXC, WGDXC and others join to suggest these individual QSL routings:

AC3SQ (via W9KOK; see preceding text)
BV1US (see preceding text)
C3MH (via W0YY)
CM8EM, O. Caballero P., Loynas nr. 52, Manzanillo, Ote., Cuba
CN8FQ (to W4UFQ)
CR5AA (to CR5AC; see preceding text)

DL4PR, V. Bridport, RAF, 6911 RGM, APO 175, New York, N. Y. (or via G3KVV)
DM3KBH, Box 666, Halle, Saale, East Germany
FB8BD, J. Mailier-Gaste, R. P. 1310, Analakely, Tananarive, Madagascar
F8BAJ (via W2AYJ)
G3FYR/V9 (via RSGB)
G5RV/PJ2 (see preceding text)
GB2SM (via W3JUL)
GD3GMH, G. M. Holt, Gay Heart Cafe, Queen's Promenade, Douglas, I.O.M.
GM3GZA (to G3GZA)
ex-HA5BM, A. B. Bodonyi, 530 45th Street, Union City, N. J.
ex-HA8S-HA8Z, P. Somasich, 1107 Apt. Valley View, S. 15th Elm St., Allentown, Penna.
HC5PW (via HC1ES)
HH3TJ, T. Johnson, La Plantation Dauphin, Cap-Haitien, Haiti
IH7FH, Box 506, Port-au-Prince, Haiti
HS1WR, Artillery Center, Lopburi, Thailand
IIPDN, Dr. E. Cerulli, Box 75, Modena, Italy
IIZCN, G. Gentile, Box 511, Firenze, Italy
JZ9PB, c/o Naval P. O. Biak, Netherlands New Guinea
K6AXS/KG6, Maj. C. K. Hicks, 3912th Air Base Sqdn., APO 349, New York, N. Y.
K9BPY/KP4 (to K9BPF)
KC6JC (via KC6RK)
KG1CA (via W3ZHL)
KG1AX, MARS Dir., Hq. NEAC, APO 862, New York, N. Y.
KG1FA, APO 858, New York, N. Y.
KG1KK (to W3NNK)
KH6AIK/KG6, Box 150, Navy 926, FPO, San Francisco, Calif.
KH6CV/KW6, c/o Weather Stn., Wake Island
KZ5GM, Box 33, Curundu, Panama Canal Zone
MP4BBA, B. E. C. Page, Box 29, Muharraq, B. I., Persian Gulf
OA4FU, A. Hiertzler, Casilla 1837, Lima, Peru
OD5BZ, P. O. Box 2806, Beirut, Lebanon
OH2OJ/OH0 (to OH2OJ)
OQ5BX, R. F. Roels, Box 1501, Elizabethville, Belgian Congo
ex-PK4DA (to PA8FM)
PY2BAY, W. H. Elias, Rua Simao Alvares 313, Sao Paulo, Brazil
PY8HJ, P.O. Box 174, Manaus, Amazonas, Brazil
PY9AE, J. Jakob, P.O. Box 2, Cuiaba, Matto Grosso, Brazil
SPIKAA, G. Listkowski, Montwillia 5/5, Szczecin, Poland
SP5HS (ex-SP5EG), C. Stomczynski, P.O. Box 92, Warsaw 32, Poland
SP6XA, T. Matusiak, Szenwald 7/3, Wroclaw 9, Poland
TF2WBU, M. T. Frickla, APO 81, New York, N. Y.
TG9AL, G. R. Caceres, Box 676, Guatemala City, Guatemala
TI9CR (via RCCR)
UA9AA, G. M. Selewo, Radio Club, Chelyabinsk, U. S. S. R.
UA9DX, Box 9, Tula, U. S. S. R.
UA9OM, M. Tihonov, Gorodok, Buryat-Mongol S. S. R.
UO5AA, c/o UC2AA, Box 41, Minak, W. R. S. S. R.
USFA, U. S. S. R. Antarctic Expedition, c/o Box N-88, Moscow, U. S. S. R.
VP4MM, J. M. MacDonald, 13 Gordon Street, Curepe, Trinidad
VP5DS, c/o W. Rashok, K4HOI, RFD 2, Box 992, Merritt Island, Fla.
VP5TS, c/o Hugh Green, 42 Patrick Lane, Rockledge, Fla.
VP7BN (to W6HNX)
VP8BW, c/o 50 Lingard St., Leigh, Lancashire, England
VP9CY, S/Sgt. V. L. Gray, Box 172, 59th WRS, APO 856, New York, N. Y.
ex-VQ4AC (to VQ3AC)
VQ4AY, Box 460, Kisumu, Kenya
VQ4GO, Box 3695, Nairobi, Kenya
VQ8AP (via VQ8AF)

(Continued on page 99)

YL News and Views

BY ELEANOR WILSON*, W1QON

Coming

THE Ninth Annual ARRL National Convention and the Second International YLRL Convention, Labor Day week-end, August 30 and 31 and Sept. 1, at the Palmer House in Chicago, Illinois.

This double-barrelled affair marks the first time the Young Ladies Radio League will hold its convention in conjunction with an ARRL national convention. A record turnout of YLs (bringing their OM's with them, of course) is expected. Spaghetti supper, luncheon, banquet. YL speakers, city excursions — these are but a few of the items on the exciting agenda. And in case Grandma can't take care of the youngsters that week-end, don't fret. The Palmer House will provide a complete nursery service under the supervision of Registered Nurses for all the wee babies, and a playroom with toys and games for children up to ten years of age, with competent nursery teachers in attendance, all at no charge!

As convention time draws nearer, W9LOY will reveal more details of the three-day program. Make your reservations with Cris Bowlin, 6563 Tahoma Avenue, Chicago 30, Illinois NOW.

All Set?

As if you didn't know it, Field Day weekend is coming up fast. We're sure you're just about ready for the grand event, the likes of which there is nothing! The dates, of course, are June 22 and 23. We'll be eagerly waiting to hear how you make out, and say, how about some interesting YL "out-door-type" pictures this year?

Keeping Up With the Girls

New officers of the SPARCYS of Florida are Pres. W4BAV; Vice Pres. W4WPD; and Secy. W4TDK. . . DJ2YL, Susi, ZP5JP, Lota, and 4SYL, Soma, in Ceylon, are all very active on 21 mcs. . . W1YYR has submitted 102 QSLs for DXCC — Mary has 5 young jr. ops. to keep things interesting at home too. . . W1HAG would like to be included in our list of active YLs in Maine. In eight months Sandy made 880 contacts "not counting repeats" on c.w., from 10 to 80 meters. . . W9GME, Grace, has

*YL Editor, QST. Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.

been appointed Assistant Section Communications Manager for the Central Division. . . OM K4ANI reports that his XYL Lucy, K4ALM, has received her commercial radio telephone 3rd class license and is well on her way to her radio telephone second class ticket. . . New members of the Texas YL Round-Up Net are K0BFH, W0YTB, W3YTM/5, K5EGB, W5s FFH, KRJ, LZU, and SPV. . . YLs, accompanied by their respective spouses, who attended a YL-OM dinner-dance sponsored by the Women Radio Operators of New England on March 30, at Lynnfield Mass., were W1s CAX, FOF, QON, SVN, TRE, UKR, VPF, YYH, and YYR. . . W9SEZ, Eleanor, and her OM are awaiting new calls at their new 55 acre antenna farm, near West Monroe, N. Y. . . We regret to report the passing of Theodora Goodfriend, W1UZV, of Riverton, Connecticut. Though she was almost eighty years old, Theo enjoyed regular c.w. contacts.



W1SCS didn't exactly climb to the top of her 70-foot tower (you figure out the pose) but Ruthie certainly did come out on top in the phone section of the 1957 YL-OM contest. Her score of 45,225 points is the highest ever reported in a YL-OM contest, phone or c.w. Ruthie says that if she had a jet, she'd fly 'round the world to personally thank each of the kind gentlemen who co-operated so generously with her in the contest — all 603 of them in 75 sections. Last year Ruthie also won top phone honors in the same contest, and in 1954 and '55 she placed second in the phone section. The benign chief operator at the Ferguson QTH in Wayland, Massachusetts, who doesn't mind sharing his wife with hundreds of OM's, YL-OM contest week ends only, is W1IIM. Ruthie ran up her high score with the help of a 75A2 receiver and a home-built kilowatt transmitter using a pair of 4-250As in the final.

Participating in a YL-OM contest for the first time, Carol Wageman, W0HQH, of Lincoln, Nebraska, received a certificate for the top YL C.W. score in the tenth district. She used her OM's call, K0BYY, for 206 contacts on 40 and 20. Carol lamented that her pestiest QRM was generated by her small jr. op. who wasn't used to mother attached to the rig all weekend.

QST for



Dena Morgan, W5DRI, of Brookhaven, Mississippi, took second place honors in the YL-OM Phone contest. Dena and her OM W5DQK, both licensed since 1954, take turns operating on several bands with their B & W 5100 and 75A3 and baby-sitting with their harmonics, ages 10, 7, and 5.

»

Results: Eighth Annual YL-OM Contest

Three hundred and seventy-five YLs and some eleven hundred OM's participated in the 1957 YL-OM Contest, according to the logs received by current contest captain and chief log-checker for the Young Ladies Radio League, Vice President Mildred Wright, W3YTM/5. Fifty-four YL c.w. logs and 73 YL phone logs were turned in, along with 99 OM c.w. and 91 OM phone logs. All states, all VE districts, and 64 countries were represented. New scoring records were made in both the phone and c.w. categories.

Summarized W3YTM: "Fifteen meters loomed as the most popular phone band, with 10 meters not far behind. Not bothered as much by QRM, the key-thumpers made 20 meters their favorite hunting ground for section multipliers, with 40, 15, and 10 following in order. Seventy-five and 80 meters did not seem as good as in past years, but old hands scoured these bands at intervals and came up with a few worthwhile markers. Some of the top scorers stayed right at the key and mike with no thought of taking time out for



This is the first place C.W. winner of the 1957 YL-OM contest rappelling off a mountain cliff near her Los Alamos QTH. Nikki Boyd, K5ADQ, is as adept with a climber's rope as she is ambidextrous in contests — she uses a straight key with her left hand and an electronic key with her right. Licensed in March 1955, Nikki suspects that she falls into the "very active" category, operating primarily on 10 and 20 c.w. She has WAS, YLCC, and has worked 119 countries. The mother of two young sons, Nikki's physicist OM is W5QVZ.



rest and sleep. We all say well done! Those who did not make high scores had their reward in making new friends, renewing old acquaintances and just generally having a good time."

Hear what some of the participants had to say about the affair:

OMs W7QLH — "Lots of fun, although I almost wore out my new call book trying to tell the YLs from the OM's in the pile-ups. Congratulations to all the fine YL operators!"

W6DAC — "I received a QSL from all but one YL in last year's contest. Hope this year will be as good."

K2DEM — "How about running two contests a year?"

W2NIY — "The YU on 3.5 mc. (YU2ACD-Melita) was a real surprise."

PA0VO — "This year I worked 36 hours on 5 bands. Got only four sweet ladies!"

W8QHW — "This is one of the best contests I have ever entered. Only two criticisms: 1. Not enough YLs in the c.w. portion. 2. Exchange should include name of operator."

YLs W1YYR — "Sure was a pleasure working alongside such efficient YL operators. Congratulations on your FB technique, gals!"

W1SCS — "Wonderful this year with so much competition. Couldn't begin to thank all the wonderful OM's for their help and cooperation."

W6QGX — "How about a shorter contest period — say 24 hours?"

KL7BJD — "One suggestion — a larger multiplier for power under 100 watts."

KZ5VR — "Do think the three log awards rule is a bit unfair." ("The highest scoring contestant in each district, where three or more logs are submitted, will receive a certificate.")

Almost all of the first, second, and third place winners, both YL and OM, have been top scorers in previous YL-OM contests.

Certificates have been awarded to the highest scoring contestant in each district, where three or more logs were submitted.

And now the winners. Congratulations to all.

YL

		Award
First Place C.W.....	K5ADQ	19,630 * Cup
Second Place C.W.....	W4HLF	18,343 Cup
Third Place C.W.....	W1RLQ	16,575 Certificate



Twenty-six members of the Wednesday morning YLRL net (3900 kc., 0930 EST, W8ATB NCS) met in person at the YL Convention at Grand Rapids, Michigan on March 9th. W8EJU, Dot, and W8RIR, Beth, were co-chairmen of the affair. Shown in the photo are: left to right; top row: W8a REI, W8E, LIV, FJU, FFI, ONI, OOO, SJF; middle row: W8a KLZ, UAP, SNB, OPT, QOV, VRH, WDW, EIR; bottom row: W9YWH, W8ATB, KN8DJH, KN8BXP, W9NW1, W9ZTH, W8RIR.

First Place Phone.....	W18CS	45,225	Cup
Second Place Phone.....	W5DRI	42,083	Cup
Third Place Phone.....	K5BNQ	39,675	Certificate

OM

First Place C.W.....	K2DSW	1,755	Cup
Second Place C.W.....	W3ARK	1,625	Cup
Third Place C.W.....	K2KDW	1,586	Certificate

First Place Phone.....	W8AJW	4,209	Cup
Second Place Phone.....	W7SFK	3,480	Cup
Third Place Phone.....	W1YWU	3,188	Certificate

* Fractions have been converted to the nearest whole number.

SCORES

YL C.W.

Call	No. of Contacts	Sections Worked	Score
W1RLQ.....	260	51	16,575*
W1VXC.....	153	32	6,210*
W1YNI.....	25	17	531*
W2EBW.....	135	29	3,915
K2JYZ.....	50	24	1,500*
K2DXD.....	47	14	823*
K2DKL.....	36	14	505*
W3URU.....	125	30	4,688*
W3TSC.....	146	31	4,526
W3CDQ.....	92	22	2,530*
W3SL8.....	90	27	2,430
W4HLF.....	253	58	18,343*
W4BLR.....	247	36	8,892
W3UTE/4.....	35	18	788*
W4KYI.....	7	6	53*
K5ADQ.....	302	52	19,630*
W5EGD.....	216	49	13,230*
W5KEC.....	211	41	10,814*
W3YTM/5.....	175	39	8,531*
K6OWQ.....	151	38	7,173*
K6BUS.....	156	38	5,928
W6PCA.....	109	29	3,951*
K6ENK.....	89	27	2,403
KN6RQB.....	60	7	525*
W6EHA.....	23	9	259*
W6WSV.....	16	8	160*
W7COX.....	192	41	9,840*
W7PUV.....	96	27	3,240*
W7PTX.....	38	18	855*
W7DIF.....	12	7	105*
W7FDE.....	5	5	31*
W8SJF.....	271	39	13,211*
W8UAP.....	188	34	7,990*
W8OGY.....	109	27	3,683*
W8SNE.....	102	23	2,983*
W8KLZ.....	79	24	2,370*
W8OTK.....	37	15	694*

YL PHONE

Call	No. of Contacts	Sections Worked	Score
W18CS.....	603	75	45,225
W1RLQ.....	373	51	23,779*
W1YXR.....	318	50	15,900
W1CEW.....	172	37	7,955*
W1ZEN.....	125	27	4,319*
W1YPT/1.....	91	23	2,616*
K1ADY.....	35	15	656*
W1VXC.....	26	10	325*
K2JYZ.....	135	44	7,425*
K2LTN.....	102	24	3,060*
K2GVM.....	52	21	1,365*
W3URU.....	376	61	28,670*
W3CZT.....	342	54	23,085*
W3VNN.....	304	55	20,900*
W3MDJ.....	290	42	12,180
W3ZUF.....	106	28	2,968
W3WML.....	22	11	303*
W4KYL.....	260	64	20,800*
W4BQI.....	213	34	9,053*
K4ETB.....	118	35	5,163*
K4KKR.....	121	30	4,538*
W5DRI.....	543	62	42,083*
K5BNQ.....	529	60	39,675*
W5SPV.....	401	48	24,060*
W5HWX.....	350	45	19,688*
W5KEC.....	327	47	19,211*
W5EGD.....	323	43	17,361*
W3YTM/5.....	272	42	13,880*
W5HWK.....	308	38	11,704
W5JCY.....	187	34	6,858
W5WXT.....	166	25	5,188*
K5CCJ.....	143	33	4,719
W6QGX.....	639	55	35,145
W6JZA.....	459	48	27,540*
K6EXQ.....	360	46	16,560
K6VFE.....	102	28	3,570*
W6EHA/M.....	74	26	2,405*
K6KUP.....	72	23	2,070*
K6QQD.....	64	16	1,280*
W7DRU.....	246	34	10,455*
W7FDE.....	42	15	788*
W8NDS.....	276	55	15,180
W8VRH.....	30	14	525*
W8OTK.....	21	12	315*

(Continued on page 166)



These five Oregon YLs were all licensed before World War II. Looking over some new equipment displayed at the Oregon Amateur Radio Association convention at Eugene, Oregon, on April 13 and 14 are standing, left to right: W7ITZ, Ruth; W7FXE, Lucile; W7HHH, Bea; seated W7FKS, Mildred; and W7ENU, Mary. Twenty-nine YLs attended the women's program, arranged by W7FKS.

STAFF OPENING

We have a permanent opening for a young amateur to do general administrative work on the ARRL Hq. staff with the title of Assistant Secretary. Here is a chance to make amateur radio your career. The work is non-technical, requires the ability to express one's self well both orally and on paper, and will later involve a modest amount of travel. Any applicant should be one with initiative who will be able to assume administrative responsibilities readily.

We'd like someone about age 25, preferably single, of pleasing appearance and personality, with at least a couple of years of ham radio under his belt, preferably someone who has had some organizational experience such as secretary or other officer of a local club. We want a young man because we would expect to train him on the job. Salary will be commensurate with ability and background.

If you are interested, write to Box A, ARRL Hq., West Hartford, Conn. State your age, marital status, and give a resume of your educational and employment or military service background, and amateur experience.

HAMFEST CALENDAR

California — The San Fernando Valley Radio Club will hold its annual Hamfest picnic on Sunday, June 9, at the Victory Van Owen Playgrounds, Area #1. For info on pre-registration, contact K6PXD, 15149 Kingsbury St., San Fernando, Calif.

Illinois — The 1957 Tri-State hamfest is being sponsored by the Western Illinois Radio Club on Sunday, June 2, at Eagles Alps Park in Quincy. All sorts of contests, an auction, a grab-bag, and refreshments. A family affair. Advance tickets \$1.25, at the gate \$1.75. Rain or shine. Contact W9HQW.

Maine — The Augusta Radio Club will hold a hamfest at the Calumet Club, Augusta, on Sunday, June 16. Advance tickets \$2.25; after June 14, \$2.50. Transmitter hunt, cake-decorating contest for OMs and YLs.

Missouri — The Missouri Hamfest will be held in Sedalia on June 9, at the Missouri State Fair Grounds. Admission \$1.00 per person. Basket lunch, free hot coffee and cold soft drinks. Swap shop, events for all.

Missouri — The North Missouri Amateur Radio Club will hold its annual ham picnic at Moberly in the Rothwell City Park, on Sunday, June 16. Registration is \$1.00, starting at 0800. Bring your own lunch. Soft drinks and coffee furnished. Games and entertainment.

Ohio — The Second Annual Northeastern Ohio 50 Mc. picnic will be held June 30 at Loyal Oak Park, near Akron. Features will include swimming, games, YL entertainment, swap tables, and fun for the whole family. Bring your basket. Incoming mobiles will be monitored on 50 to 51 Mc. Family tickets are \$2.00. Get further info from K8BDK, 1136 Dietz Ave., Akron 1.

Pennsylvania — The 8th annual gabfest of the Uniontown Amateur Radio Club will be held on Saturday, June 29, at the club house on the Old Pittsburgh Road, just off Route 51, two miles north of Uniontown. Contests, refreshments and movies. Stag. Registration \$1.00.

Saskatchewan — The annual Saskatchewan hamfest will be held at Lake Waskesiu, Prince Albert National Park

on June 29 and 30. Mobile judging, hidden transmitter hunt, and other contests. For further information, contact Marshall Albright, VESPA, Prince Albert, Sask.

Hawaii — The annual Hawaiian ham convention will be held on Saturday and Sunday, July 6-7, sponsored by the Honolulu Amateur Radio Club. Lots of contests; special mobile events on Sunday. Registration \$2.00 for the day; \$5.50 for the evening including dinner; \$7.50 for the whole affair. A Sunday picnic will be an additional \$1.00. For further info, contact HARC, P. O. Box 2868, Honolulu 3, T. H.

A.R.R.L. ROCKY MOUNTAIN DIVISION CONVENTION

Estes Park, Colorado — June 15-16, 1957

The Denver Radio Club Inc. is sponsoring the 1957 ARRL Rocky Mountain Division Convention to be held at Elkhorn Lodge, Estes Park, Colo., on June 15-16.

Elkhorn Lodge is situated near some of the most scenic parts of the Colorado Rockies and can be reached by excellent paved highways. Near-by is the Rocky Mountain National Park with its wild life, fishing and high peaks, and just over the Divide are Grand Lake, Shadow Mountain Lake and Granby Reservoir with excellent boating and fishing facilities. Arrange your summer vacation to include the convention and the hospitality of cool, colorful Colorado, and be sure to bring your camera.

There will be activities for all, including technical talks, a transmitter hunt, mobile-judging contest, special program for the ladies, horseback riding and swimming at Elkhorn Lodge's beautiful new pool. There will be fun for the entire family.

Registration fee is \$3.50 per person. Special rate of \$2.50 if registration is postmarked no later than June 4. Send your request for hotel reservations direct to Elkhorn Lodge and write to Walter M. Reed, W9WRO, 1355 E. Amherst Circle, Denver 10, Colo., for registration information.

COMING A.R.R.L. CONVENTIONS

June 1-2 — Oklahoma State, Tahlequah, Okla.

June 7-8-9 — Dakota Division, St. Paul, Minn.

June 15-16 — Rocky Mountain Division, Estes Park, Colorado

July 27-28 — West Gulf Division, San Antonio, Texas

August 16-17-18 — Southwestern Division, Long Beach, California

August 30-31-Sept. 1 — ARRL National Convention, Chicago, Illinois

August 31-Sept. 1-2 — Maritime Provinces, Charlottetown, Prince Edward Island

September 21-22 — Midwest Division, Kansas City, Kansas

October 18-19 — Ontario Province, Toronto, Ontario

November 8-11 — Far East Pacific Division, Guam

Happenings of the Month

27 MC.

The Federal Communications Commission has proposed, in its Docket 11994, to take away amateur privileges in the ISM band 26.96-27.23 Mc. and assign the frequencies instead to the Citizens Radio Service. The action is part of a comprehensive plan the Commission has evolved, after many months of study, to shuffle frequencies in various portions of the spectrum between such services as citizens, domestic, public, industrial, and land transportation, the demands for which are becoming increasingly pressing. In brief, FCC proposes to take away from the Citizens Radio Service all but a half-Mc. of its 460-470 Mc. assignment, turning those channels over to industrial and domestic public uses. Then, feeling that the Citizens will have a need for considerably greater space than the half-Mc. they are being left at 465 Mc., the Commission has expressed its intent to assign 26.96-27.23 Mc. to the Citizens service in addition to the 27.255 "control" frequency they now have.

We publish below the notice in Docket 11994, omitting only Appendix B which is a lengthy text of proposed new regulations for the Citizens service. As the final date for comment is June 10th, the Board of Directors of ARRL will have full opportunity to examine the matter at its meeting in May and formulate the League's position.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington 25, D. C.

In the Matter of
Complete revision of Part 19,
Rules Governing the Citizens Radio
Service, and reallocation of
frequencies in the range 26.96-
27.23 Mc. from the Amateur Radio
Service (Part 12) to the Citizens
Radio Service. } DOCKET NO. 11994

NOTICE OF PROPOSED RULE MAKING

1. Notice is hereby given of proposed rule making in the above entitled matter.

2. The Citizens Radio Service was originally established with the intention of providing for private short-distance radio communications, for radio signalling, or for the remote control of objects or devices by radio, to be used by individuals as well as by commercial concerns. However, the actual growth of the service has progressed primarily along the lines followed by the various Industrial and Land Transportation Radio Services, although subject to fewer restrictions as to station location or usage, and lacking any requirement of a definite frequency selection in the available band (except Class C stations). With the development of equipment capable of reliable operation in the 460-470 Mc. band, many persons have obtained authorizations for Class A stations in this service as a means of meeting the mobile and point-to-point communications needs of their respective industrial activities or other commercial enterprises which could not then be served by facilities licensed in the Industrial or Land Transportation Radio Services.

3. By separate proceedings (Docket Nos. 11950 and 11991),

the Commission proposes to reallocate 1 Mc. of the band 460-470 Mc. to the Domestic Public Radio Service and 8.45 Mc. of the band to the Industrial Radio Service in keeping with concurrently proposed changes in that Service. Only the frequencies between 464.725 Mc. and 465.275 Mc. would remain available to the Citizens Radio Service.

4. The Commission recognizes that many individuals will continue to desire the use of the Citizens Radio Service to provide for short-distance radio communication, for radio signalling, and for the remote control of objects or devices by radio; in fact, representations made by and on behalf of the Academy of Model Aeronautics indicates a substantial need for additional frequencies in the 27 Mc. range for use in the remote control of such objects or devices as model aircraft by radio. It is also recognized that not all persons now holding authorizations for Class A stations in the Citizens Radio Service will be able to establish eligibility in any of the Industrial or Land Transportation Radio Services, even if the proposed changes are consummated in those services. Accordingly it is proposed in this proceeding that frequencies in the band 26.96 to 27.23 Mc. be reallocated from the Amateur Radio Service to the Citizens Radio Service, for use by Class A and Class C stations only. It is further proposed that the frequency 465 Mc. be retained for use by Class B stations, as at present but under more stringent technical requirements, and that the other frequencies at 50 kc. spacing in the band 464.725-465.275 be made available to Class A stations. Additionally, it is proposed that the requirement for "type-approval" of equipment to be utilized by Class A stations be changed to a requirement that such equipment shall be of a type which has been accepted for licensing in this service, and that the specific frequency to be used by a Class A or a Class C station will be specified on the station authorization. It may be noted that the requirement regarding "type-approved" equipment for Class B and Class C stations (other than crystal-controlled Class C stations) is retained.

5. Reallocation of the frequency band 26.96-27.23 Mc. from the Amateur Radio Service to the Citizens Radio Service at this time appears appropriate for several reasons. First, the frequency band is a part of the larger frequency band 26.96-27.28 Mc. within which interference may normally be expected and must be accepted from industrial, scientific and medical (ISM) devices operating on the frequency 27.12 Mc. Secondly, because of the foregoing, it appears that normal amateur operation in this region of the spectrum is and has been confined primarily to the internationally recognized amateur band 28.0-29.7 Mc. and that amateur operation in the 26.96-27.23 Mc. band has been almost exclusively the type of operation which would still be permitted on those frequencies under the Citizens Radio Service; namely, the remote control of objects or devices by radio or short-distance radio communication. In addition, since licensed amateurs, as individuals, will be able to obtain personal licenses in the Citizens Radio Service for either radio control or voice communication in this band, it appears that very few privileges in connection with this frequency band will be taken from them. On the other hand, a need for a means of short-range voice communications for personal use by any individual, as well as a need for additional spectrum space for general use for radio remote control purposes, on frequencies in the 27 Mc. range, appears to have been demonstrated. The rule changes proposed herewith, among other things, are designed to produce those effects.

6. Accordingly, the Commission proposes to amend its rules to accomplish the following major changes:

- (1) To completely revise the Rules Governing the Citizens Radio Service.
- (2) To provide for "type-acceptance" rather than "type-approval" of equipment for use by Class A stations in the Citizens Radio Service.
- (3) To provide new frequencies for the Citizens Radio

Service in the frequency band 26.96-27.23 Mc., in addition to the presently available frequency 27.255 Mc.

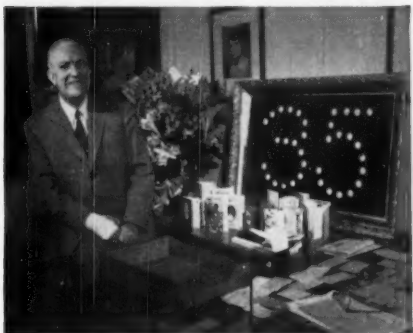
(4) To delete the availability of frequencies in the bands 460.000-464.725 Mc. and 465.275-470.000 Mc. to the Citizens Radio Service.

(5) To delete the availability of frequencies in the band 26.96-27.23 Mc. to the Amateur Radio Service.

(6) To provide for the assignment of specific frequencies to Class A and Class C Citizens Radio Stations, in addition to the assignment of the single frequency 465 Mc. to Class B Citizens Radio Stations.

7. Pending in the Commission's files is a petition filed on January 23, 1957 by the Academy of Model Aeronautics (Academy). The petition requests amendment of Parts 2, 7, 10, 11, 16 and 19 of the Commission's Rules to provide relief from interference conditions on 27.255 Mc. by reallocating assignments within the band 27.25-27.28 Mc. to provide an offset of 18 kilocycles between Class C, Citizens Radio Stations and other services, to permit the radio control of models and objects on all frequencies assigned to the Industrial, Scientific and Medical Service, to permit the assignment 460-470 Mc. band frequencies to Class C stations, and to assign a frequency or band of frequencies above 300 Mc. exclusively for the control of objects or devices by radio. To the extent that the above petition can be said to be at variance with what is proposed herein, it will be considered in any disposition of this proceeding. Such additional comments as may be submitted by the Academy will also be considered.

8. On December 19, 1956, the Commission adopted a Notice of Proposed Rule Making (Docket No. 11895) to amend Part 19, Rules Governing the Citizens Radio Service, by deleting the Note to Section 19.12. The time for filing comments thereto has expired. Comments on the above-mentioned proposal have been received from the American Trucking Associations, Inc., the Radio Specialists Company



This big "35," along with flowers, cards and other gifts from staff associates and friends, greeted Treasurer and Circulation Manager David H. Houghton in his office April 10th, the date of completing 35 years (the longest tenure of anyone) at ARRL HQ. Throughout the summer, however, we're afraid those white spots making up the figure will disappear one by one; you see, they're golf balls, an essential — and expendable — ingredient of Dave's favorite game. Fore!

and the Kaar Engineering Corporation. Inasmuch as the instant proceeding contemplates a complete revision of Part 19, including the removal of the present Note to Section 19.12, Docket No. 11895 is merged into this proceeding, and the comments filed thereto will be considered in any disposition of this proceeding.

9. The proposed amendments to Parts 12 and 19 are set forth in the Appendix hereto. They are issued under the authority of Sections 4(i) and 303 of the Communications Act of 1934, as amended.

10. Any interested person who is of the opinion that the proposed amendments should not be adopted or should not

be adopted in the form set forth herein, and any person desiring to support this proposal, may file with the Commission on or before June 10, 1957, a written statement or brief setting forth his comments. Replies to such comments may be filed within ten days from the last date for filing original comments. No additional comments may be filed unless (1) specifically requested by the Commission or (2) good cause for the filing of such additional comments is established. The Commission will consider all such comments prior to taking final action in this matter, and if comments are submitted warranting oral argument, notice of the time and place of such oral argument will be given.

11. In accordance with the provisions of Section 1.764 of the Commission's Rules and Regulations, an original and 14 copies of all statements, briefs, or comments filed shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

Ben F. Waple, Acting Secretary

APPENDIX A

PROPOSED AMENDMENTS TO PART 12

RULES GOVERNING THE AMATEUR RADIO SERVICE

1. It is proposed to delete paragraph (f) of §12.111 and substitute the following:

(f) (reserved)

2. It is proposed to amend §12.134 to read as follows: §12.134 *Modulation of carrier wave.* Except for brief tests or adjustments, an amateur radiotelephone station shall not emit a carrier wave on frequencies below 51 megacycles unless modulated for the purpose of communication.

FCC FREQUENCY STUDIES

We have earlier reported in this department the study FCC is currently making into frequency allocation and usage above 890 Mc. While no amateur band in that portion of the spectrum appears directly involved, the League filed (see May QST) a general statement of the amateur position and an intent to submit testimony at forthcoming hearings should amateur matters be discussed.

Now FCC has extended its inquiry into spectrum utilization and has announced that it will conduct a thorough study of 25-890 Mc. (Docket 11997). The Commission says it feels such an inquiry is required, on its own motion, to carry out responsibilities assigned it under the Communications Act. In support of that view, FCC cites the phenomenal growth of radio especially since World War II, the new services which have come into being (The Act requires FCC to study new uses for radio . . . and generally encourage the larger and more effective use of radio in the public interest), the resultant overcrowding of the spectrum, and the need to prepare for the formulation of FCC's position toward the forthcoming 1959 world radio conference.

The docket cites the following objectives:

7. The objectives of this inquiry contemplate a review of the present allocation of frequencies in this portion of the spectrum, in the light of the technological progress which has been made since the last review, to determine whether a more efficient utilization thereof can be made; to evaluate the long range requirements of existing and potential users of this portion of the spectrum; to obtain data as to the feasibility of applying known and potential techniques and methods relating to efficient utilization of spectrum space; to evaluate what system or systems of frequency allocation for the future would best serve the public interest; to obtain data and information as to the requirements of non-governmental radio services; to evaluate the feasibility of making

long range plans for the future use of the radio spectrum and, in particular, to determine the impact, economic and otherwise, upon users of the spectrum and the general public of implementing such future changes as may appear to be desirable and in the public interest; and, finally, to assist the Commission in formulating its position with regard to the preparation of the formal United States proposals to be advanced at the forthcoming International Radio Conference scheduled to convene in Geneva, Switzerland, in 1959.

The Commission points out there has been no such study of spectrum usage since the general allocations proceedings in 1944; in fact, FCC quotes heavily from some of the 1944 documents to show that the scope of its present inquiry will be complete and inclusive of all factors affecting spectrum economy.

As it did in 1944, the League will of course file the required data and information on behalf of the amateur service. As the filing date is not until July 1st, the ARRL Board of Directors will have opportunity to discuss the matter in detail at its annual meeting in May and determine specific aspects of League policy toward the proceeding. FCC indicates that later it will call a fact-finding hearing for a further examination of the problem on the basis of filings made by interested parties.

Inasmuch as Appendix B to the docket outlines the type of information sought and is indicative of the inclusive scope of the inquiry, we publish it at the end of this department.

STAFF NOTES

We regret to report the departure from Hq. of Assistant Secretary Lee Aurick, W1RDV, a member of the ARRL staff for three years. Lee is now engaged in general promotional and publicity work for the electron tube division of RCA, an opportunity he could not refuse; as sorry as we are to see him go, we wish him all the best. When he gets squared away at his New Jersey location, you'll undoubtedly be hearing him on the air with a new second district call.

The Hq. welcomes to its Ten-Year Club two new members: Leitha Phillips and Doreen Driscoll. Leitha's specialty is billing the hundreds of radio distributors and book stores for orders of thousands upon thousands of copies of various League publications. Credit status, a multiplicity of quantity trade prices, foreign rates, and transportation costs are some of the things that must constantly be at her fingertips. Doreen is an assistant section leader in the membership division, handling the breakdown of the mail as it relates to membership entries. After ten years at Hq. she is about ready for her LLB — Philadelphia law, that is — what with three basic classes of membership, plus Family and blind special cases, and generally keeping the membership records straight. Neither of the gals has been bitten by the ham bug; "after all," they say, "somebody around here has to stay sane." In the growing size and complexity of Circulation Department operations these days, continuity of skilled personnel — particularly in these specialized fields — is especially important to the



Doreen Driscoll and Leitha Phillips

League. No more loyal or conscientious workers ever graced the Hq. staff.

144-MC. POWER BOOST DENIED

A petition filed with the Commission something over a year ago by W0VTP, requesting a 5-kw. power limit for (General Class or higher) c.w. operation on the 2-meter band for purposes of experimenting with scatter propagation has now been denied by FCC, on the basis that "while recognizing that experiments of amateur radio station licensees have resulted in valuable contributions to the science of telecommunications, the Commission believes that the requested amendment would not significantly increase the potential for experimentation in the field of scatter propagation."

OHIO AMATEUR RADIO WEEK

Once again this year, Ohio has declared as Amateur Radio Week in that state the dates of June 16-22, culminating of course in the ARRL Field Day weekend. The Ohio Council of Radio Clubs, Ralph E. Crammer, W8VHO, chairman, was again the sparkplug. Governor O'Neill's proclamation includes the following phrases of commendation for the amateur service:

"The radio amateurs of Ohio have been given an important and vital role in planning and participating in matters of civil defense, both through the medium of radio and through their organizational and individual activities; radio station owners and operators in Ohio and throughout the nation provide and maintain at their own expense, a valuable potential "second line" communication system standing by and ready for duty in event of an emergency disaster; the radio amateurs of this country have shown a remarkable sense of responsibility and public devotion to our citizens, having in mind the pleasure and service of their fellowmen, and should receive the encouragement and interest of all our citizens in their objectives."

(DOCKET 11997)

APPENDIX B — SCOPE OF STATUTORY INQUIRY AFFECTING OVER-ALL ALLOCATION OF RADIO SPECTRUM BETWEEN 25 AND 890 MCS

I. To obtain specific data as to the utilization of the present allocations and assignments in the radio spectrum

between 25-890 mcs for the various radio services as follows:

- (a) Broadcast and auxiliary Broadcast Services.
- (b) International Fixed Public Radiocommunication Services.
- (c) Maritime Radio Services on Land and Shipboard.
- (d) Aeronautical Radio Services.
- (e) Public Safety Radio Services.
- (f) Industrial Radio Services.
- (g) Amateur Radio Service.
- (h) Radio Stations in Alaska.
- (i) Restricted Radiation Devices (TV Receiver I. F. Frequencies, etc.).
- (j) Land Transportation Radio Services.
- (k) Industrial, Scientific and Medical.
- (l) Citizens Radio Service.
- (m) Disaster Communications Services.
- (n) Domestic Public Radiocommunication Services.
- (o) Non-word Communication Uses of Radio.
- (1) Control of Devices.
- (2) Telemetering.
- (3) Signalling, etc.
- (4) Radar.
- (5) Radiolocation.
- (6) Radionavigation.
- (7) Others.

II. To evaluate the long range requirements of existing and potential users of the radio spectrum between 25-890 mcs, in terms of:

- (a) Present and future needs of existing users in the above-described services.
- (b) Needs of potential users of the radio spectrum in terms of class of service.

III. To obtain specific data with respect to the following, as it pertains to existing and potential users of the radio spectrum between 25-890 Mcs.

- (a) Justification for the use of radio.
- (b) Location in Radio Spectrum.
- (c) Minimum amount of spectrum space required.
- (1) Number of channels based on maximum channel loading (including consideration of maximum holding time per message), channel width and projected rate of growth, and also based upon use of spectrum conservation techniques; see IV *infra*.
- (d) Feasibility of sharing frequencies with other classes of service.
- (e) Possibility of transferring certain types of services or links of communication systems to frequencies above 890 mc.

IV. The feasibility of applying newly developed and potential future techniques and methods relating to efficient utilization of spectrum space, including, but not limited to:

- (a) Most efficient type of modulation for the service involved.
- (1) Type of emissions. (AM, FM, Pulse, Single Side Band, Multiplexing, New Methods.)
- (2) Necessary Bandwidth.
- (3) Occupied Bandwidth.
- (4) Allocated Bandwidth.
- (b) Frequency tolerance.
- (c) Minimum power requirements.
- (d) Maximum geographical and time sharing.
- (e) Allocation of frequencies to services on the basis of achieving maximum benefits and minimum adverse effects of the propagation characteristics of frequencies.
- (f) Maximum feasible suppression of spurious emissions from transmitters.
- (g) Use of antenna system directivity to obtain as narrow a beam as feasible consistent with rendering the needed service and to obtain greater geographical sharing.
- (h) Improved receiver design techniques.
- (i) New propagation modes and techniques.
- (j) System devices. E. g. Selective signalling.
- (k) The desirability of adopting certain minimum engineering standards of allocations in those services which have no standards in order to limit the radiation of facilities to values necessary to render the desired service, and also to minimize interference. If so, in what services, in what portions of the spectrum, and to what extent.
- (1) A reduction in the width and number of guard bands.
- (m) Others.

V. The potentialities of a broad band common carrier system in terms of:

- (a) Whether a system of this type can be more effectively exploited to conserve spectrum space through the rendition

of service to a greater number of users than could a system consisting of a number of private users, utilizing the same amount of spectrum space. (In the evaluation of this question, consideration should be given to spectrum conservation techniques; see IV, *supra*.)

(b) Areas, geographical or otherwise characterized, where this type of system would be feasible.

(c) The classes of persons and types of service whose needs could or could not be substantially met by this type of system.

(d) The minimum amount of spectrum space needed and the location in the spectrum which would provide a feasible broad band common carrier system evaluated in terms of maximum channel loading (including consideration of maximum holding time per message), channel width, and projected rate of growth.

VI. To evaluate the impact, economic and otherwise, upon existing users of the factors covered in Sections II and IV above, in terms of:

(a) The implementation of presently available and potential future techniques in spectrum conservation.

(b) The possible reallocation of existing services to other portions of the spectrum in order to obtain more efficient utilization of the radio spectrum.

(c) What considerations, including a suitable amortization period, should be given to the effectuation of (a) and/or (b).

VII. To evaluate what system of allocations would best serve the public interest, such as:

- (a) The present block system.
- (b) A general pool system in which frequencies would not be reserved for specific services, but would be available generally for assignment to various types of services.
- (c) A combination of the above.
- (d) Some other system.

VIII. In addition to the above comment is also requested on the following specific points of inquiry:

1. Should the Commission continue its basic policy of not licensing domestic fixed circuits below 890 Mc. with the exception of those placed in bands now available for fixed service and those used as integral parts of mobile systems now operating secondarily in the mobile service bands?

2. To what extent should the VHF maritime mobile allocation in the 152-162 Mc. band conform to international maritime mobile allocations? Under what conditions, if any, can the frequencies in such an allocation be shared by the land mobile service?

3. Should the maritime mobile allocations in the 30-50 Mc. band be deleted in favor of a standardized VHF maritime mobile allocation in the 152 Mc. band?

4. Should frequencies allocated to ISM be shared with communications services? If so, what should be the conditions of such sharing?

5. Would better frequency utilization be achieved and the public interest be served by permitting the bands of frequencies between 25-890 Mc. allocated for private mobile systems to be used by communications cooperatives, specialized or general communications common carriers for the purpose of permitting the latter, as licensees, to use such frequencies solely for the purpose of rendering service to persons eligible to use such frequencies?

6. What changes in the International Table of Frequency Allocations (Atlantic City Radio Regulations, 1947) are required? National frequency problems soluble within the framework of the present international allocations are not included in this inquiry.

Strays

W9QMB, we are told, had a serious case of BCI lately. It seems that his voice came booming over the bedroom radio of an elderly lady, and she said in no uncertain terms that it was positively *indecent* for his voice to be in her bedroom like that.

— — — — —

This must have been an intellectual QSO! K6PHD worked KN4LLB.



Operating News



F. E. HANDY, WIBDI, Communications Mgr.
GEORGE HART, WINJM, Natl. Emerg. Coordinator
PHIL SIMMONS, WIZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWFO, DXCC Awards
LILLIAN M. SALTER, WIZJE, Administrative Aide
ELLEN WHITE, WIYYM, Asst. Comm. Mgr., Phone

Some Facts About our ARRL Field Organization. Following calls for nominations in QST, 21 new SCMs were named to office and 12 SCMs re-elected for another two-year term of office for their Sections in '56. The percent return in SCM elections ran 37.4% to 66%, those populous sections with the larger cities running the lower percentages. LO (League Official's) Parties, informal over-the-air get-togethers in which Directors, SCMs, SECs, ECs, RMs and PAMs relax and rag chew, putting forward organization and fraternalism in the group, take place the first Saturday-Sunday of each month throughout the year. In '56 there were some 987 different individuals reported taking part in this activity.

Your Section Communications Manager (see page six, this issue of QST) invites your monthly report of what you are doing with your amateur station. Also unless you hold such a post already, he solicits your application for official-station ARRL-appointment posts, along the lines of your natural interest. You do of course have to be active along appointment operating lines to rate an SCM appointment. SCMs in pursuing their duties are assisted by Board provisions for reimbursing some of the SCM and SEC travel

in each sectional area. This helps expand radio-operating setups and emergency communication provisions under the auspices of ARRL. In '56 there were some 114 section-meetings or SCM-addressed meetings, officials of every ARRL division participating. The Section Emergency Coordinators likewise helped to assist and promote AREC-RACES communication plans and tests in 131 such SEC conferences or meetings. We continue to suggest to affiliated radio clubs that they invite the SCM, SEC or EC-ROs on timely occasions to be with their club and to talk specifically about Section operating organization and the furtherance of emergency communication planning and on-the-air activities.

Observer Activity. Cooperative notices numbering 10,348 originated by Official Observers were reported sent to amateurs in 1956. A very special commendation is rated by WIJNV, W3TFN, W7PQJ and W0PME whose efforts to help others in this department of effort have excelled in their licensing areas for two consecutive years. Their work was tops in the work totalled up from some 236 different observers. Over one-third of this observer effort was dedicated specifically toward helping curtail off-frequency radiations occasioned by harmonic emission falling outside the amateur bands, much of it from Novice operated stations. No telling how many FCC notices were beaten to the punch by an OO report . . . but the effort must have helped. Even more notices were sent if we go by the print orders adding up to 25,000 form cards ARRL supplied for this work!

Qualified members, accepted by SCMs for appointment to OO work will continue to receive forms and guidance material. ARRL will send information on specific duties and policy in reply to postal inquiries or radiograms from amateurs interested in this SCM-post in the U. S. A. and Canada. Only licensed amateurs holding a General or higher class license may apply. Applicants must have an experience background adequate enough to assure that their advices will not be based on any reports in which image reception, receiver overload or predominant effects of either the propagation medium or receiver itself have unduly colored the observed results. By means of ARRL's observer program our Amateur Service can continue to be known as a self-regulated facility for the most part. By our dedicated nets, notable traffic work with the Antarctic and for others, and our public service as accomplished in natural disasters and our self-alignment in the

ARRL ACTIVITIES CALENDAR

June 5: CP Qualifying Run — W6OWP
June 8-9: V.H.F. QSO Party
June 20: CP Qualifying Run — WIAW
June 22-23: ARRL Field Day
July 3: CP Qualifying Run — W6OWP
July 19: CP Qualifying Run — WIAW
July 20-21: CD QSO Party (c.w.)
July 27-28: CD QSO Party (phone)
Aug. 7: CP Qualifying Run — W6OWP
Aug. 19: CP Qualifying Run — WIAW
Sept. 5: CP Qualifying Run — W6OWP
Sept. 17: CP Qualifying Run — WIAW
Sept. 18: Frequency Measuring Test
Sept. 21-22: V.H.F. QSO Party
Oct. 2: CP Qualifying Run — W6OWP
Oct. 12-13: Simulated Emergency Test
Oct. 16: CP Qualifying Run — WIAW
Oct. 19-20: CD QSO Party (c.w.)
Oct. 26-27: CD QSO Party (phone)

OTHER ACTIVITIES

The following lists date, name, sponsor, and page reference of QST issue in which more details appear.

July 8-19: Operation Alert, FCDA (next month's issue).

groupings for Emergency Communication organization, we maintain a respected amateur radio. We'll try to give you some interesting figures on the traffic and emergency aspects of our ARRL field organization at another time. Activity currently is summer and winter in our modern world of amateur accomplishment, not markedly seasonal as was once the case. So this is to say, if you can take part in net operations in your section, or be animated in the observer and notice-mailing field, we hope you will do so. Your participation will be heartily welcomed if you are qualified for and interested in these activities.

WIAW Summer Sked. Refer to the chart on page 86, May *QST*, if you wish to check on details of our WIAW summer schedule. The Monday-through-Friday visiting (and operating) hours start at 1:00 P.M. EDST instead of at three o'clock now that the daylight-time arrangement is effective. We still open at seven P.M. (EDST) Saturdays and three P.M. Sundays; drop a line for a copy of a map with local highway connections and information if you plan to drop in and haven't visited the station before.

There is no change in the designated hour for starting code practice and bulletins. However, WIAW is definitely on the eastern daylight time schedule, so if you are located in a place where you did not set the clock up an hour on April 28 you will need to look for us one hour earlier. Our code practice starts at 9:30 P.M. EDST daily.

June 22-23 ARRL Field Day — Last Call. How you spend the ARRL FD, '57 version, is up to you. A final injunction may be in order to every single licensed amateur in W-VE land not to let the dates pass without trying out some sort of emergency radio equipment . . . in practical operating. To put down some QSOs in the log book may not seem an important exercise in itself, if you are otherwise on the air. But to set up equipment and make it prove itself, establishing bona-fide communication from new places and demonstrating that this could be maintained reliably under emergency circumstances if need be, is an important knack.

It fully complies with the spirit of the FD just to work by yourself or with another ham or two. Heave your line over a tree limb to attach an antenna. Hook your batteries to a small rig, portable or converted for field purposes. Go to a place where there are no wires for communication. See how you make out. A two-hour tryout and a page full of called-and-worked and you can prove yourself in either the Saturday or Sunday afternoon of the Field Day. Or you can help form a larger group or go with a club, if you belong to one or can get invited in advance. The rules for Field Day are detailed elsewhere in this issue of *QST*. A careful reading of the reports in last December *QST* on the '56 FD will spell out the many ways and flexibility-of-approach possible in connection with the ARRL Field Day. But don't let the many club reports and the aspect of competing club-wise (with similar setups and last year's scores of your own group)

obscure the *very basic purpose* to test out rigs and operators!

If you have done this you have had a successful Field Day. FDs are fun, fraternalism, competition (to some), and a challenge to technical and operating capability, which they invariably help to develop! As stated on our '46 FD-special QSL-card "There's Nothing Like an ARRL Field Day." So here's to a successful workout in the FD. See you there.

—F.E.H.

ARRL AFFILIATED CLUB HONOR ROLL

It is a pleasure to present the new 1957 Honor Roll of affiliated clubs whose *entire membership* consists of members of the League. These affiliates having 100 per cent ARRL membership are determined from data supplied in the 1957 Annual Report of Club Data. An *additional QST* Honor Roll will be published later this year. Clubs reporting the results of ARRL membership drives being conducted currently can then be included. Each listed club now will receive as a special recognition a 100% ARRL Club certificate. Appropriate for display in the club rooms, this certification makes a permanent record of the high standing and membership record of the society.

Aeronautical Center Amateur Radio Club, Inc., Oklahoma City, Okla.

Arrowhead Radio Amateur Club, Duluth, Minn.

Athens Amateur Radio Club, Athens, Ga.

The Bandhoppers Radio Club, Ferguson, Mo.

Bell Gardens Amateur Radio Association, Bell Gardens, Calif.

Blossomland Amateur Radio Association, Inc., St. Joseph, Mich.

Canal Zone Amateur Radio Association, Balboa, C. Z.

Central Illinois Radio Club of Bloomington, Ill., Inc.

Central Kansas Radio Club, Inc., Salina, Kans.

Coffee Dunks of Detroit, Mich.

Davenport Radio Amateur Club, Davenport, Iowa

Edison Radio Amateurs' Association, Detroit Area, Mich.

Gratiot County Amateur Radio Association, Alma, Mich.

Helix Amateur Radio Club, La Mesa, Calif.

Iowa Great Lakes Amateur Radio Club, Spencer, Iowa

Jamestown Amateur Radio Club, Jamestown, N. Dak.

Keystone Amateur Radio Club, Springtown, Pa.

Larned Amateur Radio Club, Larned, Kans.

Maui Amateur Radio Club, Kahului, Maui, T.H.

Muskingum Amateur Radio Association, Zanesville, Ohio

Niles Amateur Radio Club, Niles, Mich.

North Shore Radio Club, Bayside, N. Y.

Northbridge High School Radio Club, Whitinsville, Mass.

Orange Amateur Radio Club, Orange, Tex.

Order of Boiled Owls, Levittown, N. Y.

Pacific Radio Club, Los Angeles, Calif.

Par-Troy Amateur Radio Association, Parsippany, N. J.

Pickens County Amateur Radio Club, Easley, S. C.

Providence Radio Association, Inc., Providence, R. I.

Quebec Y's Radio Club, Quebec, P. Q., Canada

St. Louis Amateur Radio Club, Inc., Mo.

Scott County Amateur Radio Club, Scott City, Kans.

Sheridan Radio Amateur League, Inc., Sheridan, Wyo.

Soo Radio Club, Sidney, Nebr.

South Lyme Beer, Chowder and Propagation Society,

South Lyme, Conn.

State Line Radio Club of New York and New Jersey,

Allendale, N. J.

Tri-City Amateur Radio Club, Borger, Tex.

West Essex Amateur Radio Society, West Caldwell, N. J.

Western Illinois Radio Club, Quincy, Ill.

Westlake Amateur Radio Association, Rocky River, Ohio

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc.

7140 kc.



One of the questions frequently asked in correspondence received at headquarters is: "How do I get into RACES?" A good many amateurs seem to feel that all they need do is send in a form and that's it — they're in. Others confuse RACES with the AREC. Perhaps we have placed too much emphasis on the anatomy of organizational structures rather than in the simpler, more down-to-earth how-to-do-it items.

So how do you get into RACES? You get into RACES by signing up with your local (or state, if you prefer to work at that level and it is available) civil defense radio officer as a radio operator. It's that easy. Of course, to do this you have to sign up in your local civil defense first, which usually requires taking a loyalty oath and getting an identification card. Once you have been assigned to communications (radio) you get a certification card signed by the civil defense director indicating that you are a c.d. radio operator. This, along with your basic amateur operator license, be it novice, technician, conditional, general, advanced or extra, authorizes you to participate in RACES drills and activities, as well as be a part of the operation should we become embroiled in war.

Suppose there is no local radio officer or, for that matter, no local civil defense? In that case, you *might* be able to sign up at state level, if RACES exists there, but these operators are usually hand picked by the state r.o. Or, you may be able to sign up in an adjoining community. But

NATIONAL CALLING AND EMERGENCY FREQUENCIES

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

chances are you're just out of luck until or unless a local radio officer is appointed. Maybe your civil defense director doesn't even know about RACES or, for that matter, even about amateurs. There are such people. Tell him, get him to appoint a r.o. (you, if necessary), and get a RACES unit established. Maybe later you can get funds for some equipment. If you can't, use your own.

Meanwhile — and this is what we've been building up to — you can get organized without delay under the Amateur Radio Emergency Corps so that when the time comes to serve civil defense you will be in a position effectively to do so. Actually, you should *already* have been so organized. The AREC has been in existence since 1935. However, if you have not taken advantage of its availability, complete procedural details are given in our booklet entitled "Operating an Amateur Radio Station." The extent to which your AREC organization can and should devote its energies to civil defense (RACES) depends on several factors, such as: (1) Whether or not your local civil defense embraces all local services during a disaster — Red Cross, police, fire, Salvation Army, etc. If it does, you can work through civil defense, under RACES, to serve them all. If it does not, you should closely maintain your liaison contact with others in addition to civil defense. (2) The attitude of civil defense officials toward local amateurs. If this attitude is negative, you may find it very difficult to serve them as you would like to; if it is positive, there is no limit to the extent of coordination that can be effected. (3) What you have to offer in the way of services. There is a big difference between saying "I am an amateur and there are other amateurs who can assist you with radio communications if you can supply us with money and equipment," and "I represent a group of amateurs already organized and actively prepared to provide whatever radio communications facilities you need." There is nothing like a "fait accompli" to dispel a negative attitude, particularly if the fact can be demonstrated. No



Arlene Perez, WH6CFW (left), flew by helicopter into the tidal wave disaster area at Hanalei, Kauai, Hawaii, to help set up radio communication between Red Cross forward headquarters and 54 isolated people. Arlene is acting first lieutenant in the Lihue CAP cadet squadron. Equipment was used on 144 mc. and CAP frequencies for disaster operations. (Photo by KH6ARL.)

civil defense director in his right mind will belittle the need for communications facilities. If you can show him that you can do a job, he will be likely to want you to do it; otherwise, he may be inclined to depend on that with which he is familiar — landline telephone, police radio or other existing commercial facilities.

Think it over, fellows. If RACES provides the impetus for organization, by all means go in for RACES. If it does not exist, give some thought to organizing an AREC unit as a prelude to, if not a substitute for, RACES.

Many of you will remember the tornado that hit Gans, Okla., on January 22, killing eight people. Amateurs figured heavily in emergency communications after this disaster. W5EJK, of Muskogee, after hearing of the damage done by the twister and that communications were knocked out, went immediately to Gans in his mobile unit, taking along a command transmitter and an emergency generator. Arriving at Gans shortly after 1000, he found W5UED from Fort Smith already on the scene with his mobile, but unable to establish communication. W5EJK established communication with K5WBA at Camp Chaffee, the army base handling relief needs. By noontime he had set up his fixed emergency unit and solid contact with K5WBA was maintained from then on. W5EJK had set up a transmitter at Red Cross headquarters in Fort Smith, and considerable traffic was also handled with him and with W5GQG as well as with other stations in Oklahoma and Arkansas. W5UED remained in Gans to assist W5EJK in the operating chores throughout the day. Operation was entirely on emergency power until 1330, and at about 1600 Signal Corps men from Camp Chaffee strung a telephone line into Gans. W5EJK continued to operate until 2130, when other telephone lines were connected and his services were no longer needed. Altogether he handled 58 formal messages and some 35 "informals." W5EJK received a letter from Major Richard O. Riegler, in charge of communications operations from Camp Chaffee which said, in part: "At your own expense you entered the Gans area and demonstrated the willingness and outstanding work of amateur radio operators during emergencies of this nature."

In late January a severe ice storm struck northeast Arkansas. All commercial lines were out of service in Jonesboro and power was not restored for five days. All toll and most city telephone lines were also down. W5VTZ began operation on the 27th, the first day of the storm, and K5EED started operating the following day, both on emergency power. Traffic was handled for the City Water and Light Plant, Associated Press, Southwestern Bell Telephone Co., R.E.A., truck lines and railroads. W5RWJ, operating K5EED, handled train orders and messages for the Frisco Railway with K8AKH in Springfield, Mo., and W4WCB in Memphis for three days; about 150 messages in all.

W5VTZ handled emergency calls for emergency medical supplies and doctors, among other types of traffic; assisting operators at W5VTZ were W6s EOJ VZC VZD and K5IPQ. W4WCB set up his station in the Frisco railroad station in Memphis and was assisted by W4BOR, handling approximately 50 messages. Operation was on 7290 in the daytime, on 3810 at night. The Memphis deputy c.d. director asked W4LYG to contact Jonesboro regarding a supply of dry ice for saving food in frozen food lockers which were without electricity; this was handled successfully with W5VTZ. W4DQH and W4AFB of Memphis were also known to have handled some emergency traffic. W0YKC, EC and radio officer for three counties in Missouri, served the railroad, telephone company, and power company in Campbell, Mo., who were in need of supplementary communications during the storm.

On the morning of April 1, the c.d. director of Etowah County, Ala., alerted the Gadsden Emergency Net (AENH) to obtain information from the storm area of Anniston, Jacksonville and Piedmont. With K4BWR acting as NCS using station K4JMC at the Gadsden Amateur Radio Club, mobiles were dispatched to each area. K4BTO/m covered Piedmont, contacting police, telephone and power departments. All modes of communication had been out in this area. K4AJK/m covered Anniston and Jacksonville, contacting the same departments in those areas. Contact was maintained with K4JMC in Gadsden. Reception was generally good, and all stations cooperated in keeping the frequency clear. — K4BTO, EC & Radio Officer, Etowah Co., Ala.

KH6ARL suggests a one-tube converter set on one of the National Calling and Emergency Frequencies to go ahead of a conelrad receiver, equipped with a switch so that when you are transmitting, or about to transmit, the conelrad receiver performs as such. When not transmitting, the conelrad receiver monitors the NCEF. He says one d.p.d.t. switch would do it: on one position it flips on the speaker and the converter; on the other position the converter is off and the alarm circuit is on. Good idea?

Amateurs in Mobile, Ala., donated their time, gas, autos and rigs to assist in the United Cerebral Palsy Telethon held on Feb. 2 and 3, as they have in previous years. The club station, W4QEE, was set up at telethon headquarters. At 1038, Feb. 2, W4QEE/4 was on the air to check out transmitter and antenna installations and let mobile stations check their rigs. At 1100, five mobile units participated in the parade of about 100 automobiles. At 2100 all the amateurs met at telethon headquarters for a briefing, and at 2230 the telethon got under way. Seventeen mobiles participated and W4QEE/4 was operated by 19 different amateurs before the net was closed at 1725 the next day, having handled 900 messages and collected \$3,000 in seventeen hours of continuous operation. EC K4EEH, who spearheaded the amateurs' efforts, says this was an excellent test of equipment and personnel at the same time it provided a public service, and would be glad to give other ECs information on how it was set up.

On Feb. 10, an emergency roll call of the AREC of the Springfield, Mo., area was held to find out how many stations could be rounded up on short notice. Net control was W0LQC, assistant EC. A total of 22 stations checked in within 15 minutes and six new members were added to the group. EC W0HUI admonished all that spur-of-the-moment drills would be called from time to time, so all concerned should hold themselves in readiness.

SEC W4JSH of Kentucky reports a successful statewide c.d. exercise held on February 23. Five mobile support groups failed to report activity, although it was active dur-

ing the drill. State headquarters was manned on 80 meter c.w. by W4HOJ and K4BVB. This activity was not conducted on RACES frequencies and was not under a RACES plan, although one is in the making. State officials expressed themselves as well pleased with the communications supplied.

Amateurs of Dade County (Miami), Fla., assisted on March 3 in the "Crusade for Children" telethon. W4MVR and W4SDI set up their 2-meter station and beam atop telethon headquarters to work other 2-meter stations who in turn relayed on ten meters the names and addresses of contributors. These "area NCS" relayed to mobiles and fixed stations all necessary information from telethon headquarters. Each pledge was assigned a number, and after being picked up by a mobile the operator filed a message indicating which number had been picked up. Five stations served as "area NCSs" with stations on both 2 and 10 meters. Amateurs without mobiles would drop in at the fixed NCS point for information, then drive out to pick up the donation. Telethon headquarters reported over \$5,000 picked up and 186 messages completed. — W4LYT, SEC Eastern Fla.

Twenty-two SECs reported February activities on Form 8, representing 6252 AREC members. This is an increase of one report over the same month last year, and almost a thousand AREC members represented; it also represents the highest number of SEC reports ever received for the month of February. Three new sections, Southern New Jersey, Montana and Arkansas are added to the 1957 list, making a total of 26 different sections heard from this year. Other sections reporting: Ga., Santa Clara Valley, New Mex., San Joaquin Valley, Colo., W. N. Y., Conn., Minn., N. C., E. Fla., Iowa, Maritime, Tenn., NYC-LI, Ore., E. Pa., Wis., Ala., Md.-Del.-D. C.

RACES News

With the appointment of a new state Radio Officer (also SEC) in Louisiana (one K5BES), RACES activities took a decided upswing. An amendment to the communications plan has been placed on file with FCC in which the state is divided into seven zones, four of which are designated "attack" zones and three "support" zones. Radio officers have been appointed for all six areas (all but one of them is also ARRL EC). Statewide command networks are conducted by a.s.b. on 3993, by c.w. on 3501.5, in the Disaster Communications Service band

and on public safety frequencies, with an additional RTTY net still in the planning stages. Each area of course has its own network consisting of an area control station and report centers within the area, closely following the logical pattern which is becoming pretty standard throughout the nation. Below this level it is assumed local nets on v.h.f. will be or have been established. The RO and SEC, K5BES, put out a monthly bulletin outlining progress within the state.

News on North Carolina RACES: SCM W4RRH informs us that RACES authorization by AREC districts, as originally proposed, has been supplanted by authorization by counties. To that end, each district EC is being urged to file a communications plan for his own county, and as-

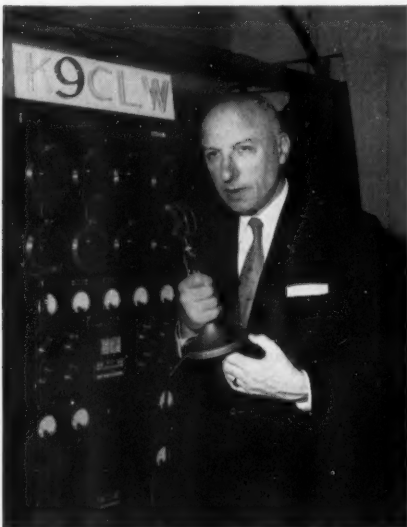


This is W3FIQ, who operated during the Thanksgiving Day blizzard in Western Pennsylvania for three days relaying urgent requests for food, bedding and other supplies from Springfield (Pa.) to Erie. In recognition of his outstanding work, Sam was awarded a special citation in General Electric's Fifth Annual Edison Radio Amateur Award.

stant ECs for other counties in this same district are being urged to do likewise for their counties. Seventeen county plans were thus filed from March 5 to March 22, with over fifty in the process. A state command and information net has been formed in which each EC has been made an authorized RACES station. Riley, W4RRH, says all it takes is someone interested plus some work.

FCDA headquarters in Battle Creek, Mich., will henceforth be represented on the air by the call letters K8ERA, the club station of the Triangle Club, most of whose members are of the FCDA staff. Bear the call K8ERA in mind for FCDA contact.

Operation Alert is scheduled to start on July 12 this year, and will last approximately five days. Full details in July QST.



General Robert M. Woodward, III, state civil defense director, makes a transmission during a RACES drill over K9CLW, state net control station in Chicago. The Illinois c.d. director said he is proud of the over-450 members of his RACES net who have cooperated in every state and local c.d. exercise during the past several years.

TRAFFIC TOPICS

This treatise is on the subject of the "service" message — when and how to use it. Before you read this, dig out your copy of "Operating an Amateur Radio Station" and read up on the subject (p. 12). That isn't too much to go on, so hear these supplementary comments:

Ordinarily, one doesn't originate a service message to tell the originator that a message was delivered. But it is always good manners, and often necessary, to tell him it was not. If you do this (and you should!) you should refer to the message clearly in the text of your service, state the reason why no delivery was effected, and conclude with your subsequent disposition — that is, whether the message has been cancelled or is being held pending further information. The form of the message (on c.w.) would go something like this: SVC NR 1 WINJM CK 27 NEWINGTON CONN 1900 APR 15 to W6HC SAN JOSE CALIF BT REF UR MSG NR 7 APR 13 to F E HANDY ARRL WEST HARTFORD CONN STOP ADDRESSEE UNKNOWN AT THIS ADDRESS STOP PSE GBA OR ADVISE DISPOSITION BT WINJM. On phone: "Service message number one, WINJM, check 29, Newington, Connecticut, nineteen hundred, April fifteen, to W6HC, W six Henry Charlie, San Jose California. The text: Reference

your message number seven, April thirteen to F (as in Frank), E (as in Edward), Handy, ARRL, West Hartford Connecticut, period addressee unknown at address given period please give better address or advise disposition. Signed: WINJM."

Note the three essential parts of the text: (1) identification of the message by number, date and addressee; (2) reason for the service message; (3) request for instructions. The latter, in some cases, may simply indicate the disposition you are making of the message, although in most instances it is advisable, if not courteous, to await the originating station's instructions. Obviously, if the addressee moved and left no address, or moved to another point some distance away, or is deceased, the originating station can simply be informed of cancellation; but never cancel a message arbitrarily or per-emptorily because the address is garbled, because the message is "too old," because the address can't be found, or because the text doesn't make sense (to you). Send a service message and await instructions. If no instructions are forthcoming, another service message after a reasonable time can indicate cancellation.

On MARS refills, the service message should be addressed to the refilling station, which is in effect the originating station as far as we are concerned. Of course, if the refilling station is unknown, you've had it; you can't service the originating station if you don't know who he is. On traffic generated at fairs or exhibits, it is not likely that the originating station will be able to give you information, but originate a service message anyway. Go through the motions. What can you lose?

An undelivered message counts only as one received. A service message which you originate counts as one originated, its reply (if any) as one received and, if this makes delivery of the subject message possible, you can take an extra count as one delivered, the 48-hour stipulation in this case applying from the time you receive correct delivery information provided you originated the service message within 48 hours of the receipt of the subject message.

Subject of treatise next month: the "book" message.

Miscellaneous March net reports: Early Bird Transcontinental net reports 31 sessions, traffic count 589. North Texas — Oklahoma Net reports 31 sessions, 223 messages, 1095 check-ins; K5AEX is the new manager. W9KOY reports Interstate Single Side Band Net with 57 messages, 49 average station attendance. Transcontinental Phone Net report: 1st Call Area — 1195; 2nd Call Area — 1150; 3rd, 4th, 8th, 9th and 0th Call Areas, 697; total — 3042.

National Traffic System. In 1953 we wrote a letter to a prominent West Coast traffic man which said, in part: "It is desirable to decentralize as many . . . NTS matters as possible, looking even toward the ultimate where the system runs itself and looks to ARRL Headquarters only for supplies and general guidance." At the present, much of the administrative responsibility for NTS rests on the shoulders of one person at headquarters. It was back in 1953, in connection with just this letter which we quote above, that the Pacific Area Staff of NTS was formed — a group of prominent traffic and NTS men on the Pacific Area consisting of the TCC Director, the PAN, RN6 and RN7 managers and three "members at large," whose function was primarily concerned with cementing together the activities of NTS in that area by exchange of ideas, discussion of problems, contact with and between section net managers, and recommendation of amateurs to fill vacancies at regional, area or TCC managership levels and when they occurred. This staff was formed on an experimental basis, as a big step toward self-administration of NTS. Slow in getting started, the Pacific Area Staff has in recent months performed admirably in fulfilling its functions.

We now wish to announce that PAS is being taken off the "experimental" list and shall henceforth be an integral part of the system. The headquarters, charged by the Board of Directors with sponsorship and administration of NTS, will look to this group, which elects its own chairman and its members-at-large, to make recommendations for the betterment of NTS in the Pacific Area, and will implement such recommendations to the extent practicable in consonance with the welfare of the rest of the system. Its members: W6HC, member-at-large and chairman; W6ZRI, RN6 Manager; W7GMC, RN7 Manager; K6DYX, PAN

Manager; W0KQD, Pacific Area TCC Director; W6UTV and W7FIX, members-at-large.

Area staffs in the other two areas will be formed if this is indicated by the wishes of the NTS traffic men in those areas.

March reports:

Nd	Sessions	Traffic	Rate	Average	Representation
EAN	22	943	1.28	43.0	93.9
CAN	31	1151	1.38	37.1	97.8
PAN	28	788	0.57	28.0	100
1RN	26	365	0.68	14.0	95.1
2RN	51	377	0.52	7.4	97.6
3RN	42	244	0.41	5.9	88.8
RN6	47	356	...	7.6	47.7
RN7	52	260	0.16	5.0	...
8RN	43	255	...	5.9	92.2
9RN	62	814	0.87	13.1	87.5
TEN	93	2040	1.03	21.7	71.1
ECN	14	81	0.53	5.8	88.1
Sections ²	672	5495	...	8.2	...
TCC (Central)	...	1835
TCC (Pacific)	106 ³	760
Summary	1183	15824	CAN	11.1	PAN
Record	1239	16369	1.72	13.9	100

¹ Regional net representation based on one session per night. Others are based on two or more sessions.

² Section nets reporting: AENP, AENT & AENB (Ala.), KYN (Ky.), MDD (Md.-Del.-D.C.), GSN (Ga.), CPN (Conn.), Minn. Phone (Nooon & Evening), QKN, QKS & QKS 88 (Kana.), QMN (Mich.), NJN (N. J.), WSN (Wash.), TLCN (Iowa), OSN/PQN (Ont.-Que.), SCN (Calif.), WVN (W. Va.).

³ TCC schedules kept, not counted as net sessions.

Lacking reports from two regions and one TCC Director, we failed this month to break any records. In all probability had they been received, we would have been over the top again. Let's try to get those reports here on time, fellas. The fifteenth of the month is the deadline.

W9DO says that an average of 18 stations QNI CAN each night, which is 12 more than the basic "cadre." K6DYX submits his first report as PAN manager, and it's a good 'un. W1s DZV ELJ JLZ and KKM have received 1RN certificates, and 17 others are eligible. W2BRC and W2HTH have received 2RN certificates. W7WAH reports for RN7 again while W7GMC is on vacation. The following stations have received 8RN certificates: W3s BWK ELW GBF HXB IBB ILP MVJ OFU PBO QOQ SJF SZU VTP ZLK. W4ZBD earned his 9RN certificate the hard way, by serving as NCS on Saturdays. W8ZWG has been awarded a TEN certificate with a letter of congratulations from net manager W6KJZ; TEN is harassed by lack of Manitoba contact. ECN certificates have been awarded to VE1DB and VE3DCX; only 14 ECN sessions were reported out of 21 scheduled in March.

Transcontinental Corps: W0KQD sends in her usual detailed report on TCC-Pacific. In March there were 17 stations performing TCC functions. Thirty-six supplementary schedules were held to clear TCC traffic, in addition to the 106 regular schedules reported. Only three of the regular schedules were unreported. In the Central Area, W8SCA's only comment is: "Everything still OK in Central Area TCC." But get a load of that traffic total! No report from Eastern Area TCC this month.

Norfolk County (Va.) recently opened its first civil defense control station. This installation employs three transmitters and receivers for local (10 meters) and long haul (75 meters) work. A separate receiver is used to monitor a local emergency calling frequency. Standing is W4YOO, Norfolk County radio officer. Seated, left to right, are W4PAK, Va. SEC, and W4NXX, alternate radio officer.

CLUB COUNCILS AND FEDERATIONS

The Cleveland Area Council of Amateur Radio Clubs, Henry Bormann, Secy., 4345 West 50th St., Cleveland 9, Ohio.

Federation of Eastern Massachusetts Amateur Radio Associations, Ernest A. Coons, W1JLN, Acting Chairman, 25 Atlantic Terrace, Lynn, Mass.

Indiana Radio Club Council, Inc., Joseph A. Chasey, W9EIV, Secy., 5613 E. 21st St., Indianapolis 18, Ind.

The Los Angeles Area Council of Amateur Radio Clubs, Inc., Dorothy E. Williams, W6QLM, Secy., 361 Marie Ave., Los Angeles 42, Calif.

Michigan Council of Clubs, Roland R. Beineman, W8QBA, Secy., 136 Guild St., N.E., Grand Rapids, Mich.

Ohio Council of Amateur Radio Clubs, Ralph E. Crammer, W8VHO, Secy., 3989 Indianola Ave., Columbus 14, Ohio.

Ontario Amateur Radio Federation, G. Moes, VE3BV, Secy., 226 North Shore Blvd., Burlington, Ont., Canada.

ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

Colorado	B. Eugene Spoonemore, W0DML	Feb. 11, 1957
Wisconsin	George Wolda, W9KQB	May 12, 1957
Iowa	Russell B. Marquis, W0BDR	June 16, 1957

In the Sacramento Valley Section of the Pacific Division, Mr. LeVaughn Shipley, K6CFF, and Mr. Harold L. Lucero, W6JDN, were nominated. Mr. Shipley received 138 votes and Mr. Lucero received 82 votes. Mr. Shipley's term of office began Feb. 25, 1957.

In the Maryland-Delaware-District of Columbia Section of the Atlantic Division, Mr. Louis T. Croneberger, W3UCR, Mr. John W. Gore, W3PRL, and Mr. Raymond de Courcelle, W3DQZ, were nominated. Mr. Croneberger received 322 votes, Mr. Gore received 317 votes, and Mr. de Courcelle received 112 votes. Mr. Croneberger's term of office began Mar. 21, 1957.

In the Nebraska Section of the Midwest Division, Mr. Charles E. McNeel, W0EXP, and Mr. Floyd B. Campbell, W0CBH, were nominated. Mr. McNeel received 123 votes and Mr. Campbell received 108 votes. Mr. McNeel's term of office began April 15, 1957.

ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given.



herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reason of expiring membership, individual signers uncertain or ignorant of their membership status, etc.

The following nomination form is suggested: (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. (place and date)
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the
..... ARRL Section of the
Division, hereby nominate
as candidate the Section Communications Manager for this
Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— F. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
Yukon*	June 10, 1957	W. R. Williamson	Mar. 17, 1949
Manitoba*	June 10, 1957	John Polmark	Mar. 2, 1957
Saskatchewan*	June 10, 1957	Harold R. Horn	Apr. 15, 1957
Maine	June 10, 1957	Allan D. Duntley	May 16, 1957
Eastern Penn- sylvania	June 10, 1957	Clarence Snyder	June 15, 1957
North Dakota	June 10, 1957	Elmer J. Gabel	June 15, 1957
San Joaquin Valley	June 10, 1957	Ralph Saroyan	June 15, 1957
Southern New Jersey	June 10, 1957	Herbert C. Brooks	Aug. 26, 1957
Indiana	Aug. 9, 1957	Seth L. Baker	Oct. 14, 1957
East Bay	Aug. 9, 1957	Roger L. Wixson	Oct. 14, 1957
San Diego	Aug. 9, 1957	Don Stanifer	Oct. 15, 1957

* In Canadian Sections nominating petitions for Section Managers must be addressed to Canadian Director Alex Reid, 169 Logan Ave., St. Lambert, Quebec. To be valid, petitions must be filed with him on or before closing dates named.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from WIAW will be made on June 20 at 2130 EDST. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run from W6OWP only will be transmitted on June 5 at 2100 PDST on 3590 and 7128 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m., you may try later for endorsement stickers.

Code-practice transmissions are made from WIAW each evening at 2130 EDST. Approximately 10 minutes' practice is given at each speed. References to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your flat, hook up your own key and buzzer or audio oscillator and attempt to send along with WIAW.

Date	Subject of Practice Text from April QST
June 3:	Grounded-Grid Tetrode Kilovolt, p. 11
June 6:	A Three-Band Cubical Quad . . . p. 16
June 11:	V.H.F. Meteor Scatter Propagation, p. 20
June 14:	Variable Band Width Q Multiplier, p. 25
June 18:	A Compact All-Band Antenna, p. 29
June 21:	The Governor-to-President Relay, p. 45
June 24:	General Operating With Mike or Key, p. 46
June 27:	Field Day Statistics, p. 52

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for March traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W2KIB	91	1083	899	125	2108
W0BIB	66	845	765	23	1701
W3W1Q	42	735	721	62	1580
W0PZO	4	738	721	8	1471
W0SCA	4	726	709	1	1440
W7BA	29	581	545	31	1186
W0CPL	5	550	511	39	1105
W3CUL	131	497	371	92	1091
W0LCX	17	515	500	15	1047
W9CXY	4	519	511	8	1042
W9QJZ	12	466	468	7	953
W4PL	53	447	376	54	882
W0LGC	33	397	356	22	808
W1LDE	15	434	351	5	805
W3UE	11	398	359	27	785
W8UPH	46	378	248	112	784
W6DDE	3	388	282	106	779
W8VTP	6	355	329	26	716
W7PGY	31	329	276	53	689
W2KPV	0	330	294	44	668
W8ELW	12	326	310	13	661
W9DU	21	301	41	281	644
W6GYH	457	81	68	19	624
W7VAZ	34	300	252	38	624
W5DRZ	37	303	264	18	622
W0ZW L	7	339	7	264	617
W6GQY	232	72	224	33	561
K7WAT	52	254	226	28	560
W9BHZ	25	271	215	46	557
W7AFB	8	273	269	4	554
W9EQO	4	270	266	4	544
W0GAR	3	264	260	7	534
W5ESB	16	256	243	13	528
W9TT	34	250	174	62	520
W9JOY	207	165	124	14	510
W4ZDB	74	222	201	8	505
V3ZVP	24	251	244	3	504
W5UXE	96	203	171	32	502
Late Report:					
W7AFP (Jan.)	6	283	258	28	575

More-Than-One-Operator Stations

K7FEA	148	987	949	8	2092
K5WAB	42	830	789	41	1702
W4DFU	675	60	50	10	795
K7FAE	52	217	269	92	630
V3SMRC	287	4	287	0	578

BPL for 100 or more originations-plus-deliveries:

W9NZZ	237	W0KJZ	117	W2MLW	105
W1YRZ/2	184	W1BFW	117	W0FVG	101
W6N1Y	169	K6OZJ	114	Late Reports:	
W9PQJ	150	W8GFE	110	K8HBQs	(Feb.) 207
K8HBQs	140	W9DGA	110	K2LTI	(Feb.) 133
K2WAO	126	K4DKA	107	KP6AK	(Feb.) 101
W9ELR	126	K7FBN	107		
KP6AK	125	K9BFS	107		

More-Than-One-Operator Stations

K3WBJ	116	W4SKH/4	110
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BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K2IYP, W7WOK, W8VTP, K9BCQ.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. possessions who report to their SCM a message total of 500 or more, or 100 or more originations-plus-deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

CODE-PRACTICE STATIONS

The following is a partial listing of stations participating in the ARRL Code-Practice Program:

- W1KKT, Frank Nutter, Mill St., P. O. Box 209, Milton, New Hampshire; 28.2 Mc.; Wednesdays, 2000-2030 EST; 6 w.p.m.
- W1NQB, Frank Piatek, 384 Holyoke Rd., Westfield, Mass.; 29.6 Mc.; Mon. through Thurs., 1830 EST; 5-18 w.p.m.
- W2EBZ, Clay Cool, (K2GMC alternating), 443 West 47th St., N. Y. 36, N. Y.; 144 and 50 Mc. on request.
- W2NHG, Saul Schackel, 13530 232nd St., Jamaica, L. I., N. Y.; 145 Mc.; Mon., 1930 EST; 5-10 w.p.m.
- W2MSK, Martin Heuvelmans, 62-07 Alderton St., Rego Park, N. Y.; 28.9 Mc.; Mon., 1930 EST; 8-10 w.p.m.
- W2NKK, John Oberlies, 22 Sleepy Lane, Hicksville, L. I., N. Y.; 3580 kc.; Tues., Fri. and Sun., 2030 EST; Fri., 5-13 w.p.m., Sun. and Tues., 5-35 w.p.m.
- W3NL, Ralph Anderson, 2509 32nd St. S.E., Washington 20, D. C.; 1813 kc.; Mon. through Fri., 2000 EST; Sat., 1000 EST; beginner's speeds.
- W3UVD, Walter Downes, RD #2, Box 328, Jeannette, Penna.; 3700 kc.; Tues., 2000 EST; 5-15 w.p.m.; (Club Call, W3UYE).

W4IYT, Andrew Clark, 41 Lenape Dr., Miami Springs, Fla.; 28.7 Mc.; Mon. through Fri., 2100 EST; 5-18 w.p.m.

W4RUR, Edward Blatt, 536-16 Ave. South, St. Petersburg 5, Fla.; 7086 kc.; Mon. and Wed., 1900 EST; 6-22 w.p.m.

W5DAG, Malcolm Hovis, 909 Ruby St., Osceola, Ark.; 3790 kc.; Mon., Wed., and Sat., 2030 CST; 5, 13, and 20 w.p.m.

W5USN, Naval Reserve Radio Station, Marconi Drive at Robert E. Lee Blvd., New Orleans 24, La.; 3750 kc., 7100 kc.; Fri. through Mon., 3750 kc., 1930 CST; Mon. through Fri., 7100 kc., 1230 CST; Fri. through Mon., 7100 kc., 1930 CST; 15 w.p.m.

W6ODX, Ronald Reed, 11671A San Vicente Blvd., West Los Angeles 49, Calif.; 8836 kc.; Mon., Wed., Fri., and Sat., 2000 PST; 13-15 and 20-25 w.p.m.

W7IY7, William McKeeth, 2216 Madison, Boise, Idaho; 7162 kc.; Mon., 2030; Tues., 2000; Wed. and Thurs., 1945; 5-15 w.p.m.

W8STR, Meredith Barger, Box 446, Gnadenhütten, Ohio; 3670 kc.; Mon., Wed., Fri., 1900 EST; 5-20 w.p.m.

W8VYU, Perry Ballinger, 365-26th St. N.W., Massillon, Ohio; 7080 kc.; Wed., 2000 EST; 5-25 w.p.m.

W9UIN, Joseph Kadlec, 1148 Ashland Ave., Evanston, Ill.; 7240 kc.; Sat. and Sun., 0800 EST; 4-8 w.p.m.

(More Code-Practice stations next month.)

FEBRUARY FMT RESULTS

The Frequency Measuring Test of February 12, open to ARRL Official Observers and other amateurs, brought entries from 255 participants (110 Observers and 145 non-OOs) who made 1138 measurements in all. Everyone who took part has already received an individual report comparing the accuracy of his measurements of the WIAW FMT transmissions with those of a professional laboratory. The leaders' standings are listed below.

Observers	Parts/ Million	Observers	Parts/ Million
W8CUJ.....	0.1	W8HB.....	0.0
W8GBF.....	0.1	W4JUI.....	0.1
W0OTR.....	0.1	W8GQ.....	0.1
W1MUN.....	0.2	W9TCJ.....	0.2
W4CVO.....	0.2	W9VZF.....	0.3
W4EWC.....	0.3	W1WPG.....	0.5
W8YCP.....	0.5	W3AHZ.....	1.5
W2FE.....	0.7	W2OUG.....	1.7
W1RLQ.....	2.0	W1BW.....	2.1
W2LS.....	2.4	W6MXQ.....	2.7
W7FU.....	2.7	W6AXV.....	3.2
W3TFN.....	3.4	W5JPM.....	4.8
W6GQA.....	3.7	W7FNS.....	5.0
VE6HM.....	4.4	W4QDY.....	5.4
W9DHT.....	5.4	W7PSO.....	5.4

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM.....271	W6DZZ.....264	W8BRA.....261
W1FH.....271	W6CTQ.....263	ZLZCX.....260
W8HGW.....269	W5ASG.....262	W6SN.....260
W6ENV.....269	W8KIA.....261	W7AMX.....260
W9NDA.....268	W3ATC.....261	W6VFR.....259
W6MX.....266	W6TTT.....261	W6MEK.....259
W3GHD.....264	W3BES.....261	LU6DJX.....259
W8NBK.....264	W2AGW.....261	KV4AA.....259
W6SYG.....264	W6RW.....261	W3KBT.....259
PY2CK.....264		W2HUQ.....259

Radioradio

PY2CK.....259	W8HGW.....244	W3JNN.....238
VQ4ERR.....252	CN8MM.....243	W8BF.....237
W1FH.....250	W8GZ.....243	W6AM.....235
Z8GBW.....244	W9RDA.....240	W1NWO.....234
	W9NDA.....240	

From March 15 to April 15, 1957 DXCC certificates and endorsements based on postwar contacts with 100-or more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

CO2BL.....204	W5GAI.....106	W6YC.....101
PY2BAU.....146	F3IM.....106	W8GB.....101
COXL.....133	J7ADJ.....105	W8UED.....101
K5ABW.....132	W5QVZ.....104	W1ZEV.....100
W9PZT.....128	W6GNG.....104	W2FXA.....100
Z8GWS.....117	SM5BG8.....104	W2PDB.....100
K4CTU.....115	VE3DIF.....104	W4REY.....100
ZL1OA.....115	YV5BS.....104	W4AFS.....100
W3EBG.....112	K5ADQ.....102	W4KN.....100
G3G8Z.....110	K6EDE.....102	W4LZW.....100
G5NM.....110	W9DSO.....102	W5RHW.....100
W9WJH.....109	W8QJW.....102	W8MFW.....100
K6IYJ.....108	CN5JX.....102	W9ROK.....100
W3DBX.....107	G13GAL.....102	CR7CI.....100
W0YTL.....107	J49AA.....102	PA8BX.....100
K4GSS.....106	W1YYR.....101	PA8LOU.....100

Radioradio

PY7YS.....111	W1JXM.....104	W0WXJ.....100
W6ZEN.....109	W3DRD.....104	HC2BH.....100
W9CXK.....107	W4KCR.....104	HL1WL.....100
W5CYO.....106	DL4OR.....103	PA0ZD.....100
Z8GWS.....105	W5M2P.....100	SM4BMX.....100

ENDORSEMENTS

W6SAI.....256	W6YY.....233	W5ABY.....214
W7GUV.....251	W5FFW.....232	W6TXL.....214
W5ADZ.....249	W6DI.....230	W8BVM.....213
W6GFE.....249	W6HIA.....230	W9QZ.....212
W9HUZ.....245	W8KML.....230	W7AC.....211
VK2DI.....245	KV4BB.....222	W7AD8.....211
W7GBW.....242	G3HLS.....222	W9KRL.....210
ON4AU.....241	W5BNO.....220	W5FXN.....206
W3EPV.....240	W9GRV.....220	W8YIN.....204
W6HX.....240	W8UDR.....215	W3VKD.....203

W8YK.....203	W3ZQ.....164	E4ABH.....140
W6ANF.....203	KZSDG.....163	VE1EX.....136
W7GXA.....202	DL4ZC.....162	W2PTJ.....131
W6GNA.....201	HB9AO.....162	W5VNL.....131
W1TX.....200	PA0ZL.....161	K6DNH.....131
W8PUD.....200	SM3EP.....161	TC9AD.....131
W6ALQ.....200	W2AKJ.....160	VE1PA.....131
W6JK.....200	W4NBV.....160	ZE3JO.....127
KH6PM.....200	W4TFB.....160	W7GKJ.....123
W8GJK.....192	W6RS.....160	W8ERA.....122
W5PZL.....191	VO1DX.....160	JA1AG.....122
W9EU.....191	1ICZE.....156	W3KFP.....120
K44AD.....190	K6EVR.....155	W3WFO.....120
W6BUO.....190	W6ITH.....155	W4JZQ.....120
W7FB.....190	W0UQU.....154	W4URA.....120
OZ7BG.....190	W1WLW.....153	W5DQK.....120
W1WY.....185	W9YSK.....153	SM3ARL.....120
W1BFT.....184	LA2B.....152	VE3IR.....120
W8OCV.....180	W5TFC.....151	E4BAF.....118
W9KA.....180	W4JBQ.....151	W6BAG.....115
W3LMM.....175	W5CEC.....150	W6TRX.....113
W6UQQ.....175	W7BGH.....150	W9WYB.....113
ZLZHP.....173	W7FBD.....150	W6CBE.....112
W3JNM.....172	W8XPX.....150	W2KTU.....111
W6QNA.....172	W0CPM.....150	W8SER.....111
W8HML.....172	OK1KT.....150	W8TTO.....111
W2HQL.....171	OZ7SN.....150	VE2TW.....111
W2IRV.....170	G3IDC.....144	W2BWC.....110
W7IQL.....170	W4PVD.....140	W3CDG.....110
PY1ADA.....170	W6ETJ.....140	W9XCX.....110
W7DAA.....169	W6OUN.....140	GM3EOJ.....110
	K9BVR.....140	

Radioradio

IISM.....210	HB9LA.....170	K4BVQ.....130
KV4BB.....207	W3VKD.....167	W4BA.....130
W6YY.....206	KZSDG.....167	TC9AD.....130
W6GVM.....206	W1EQU.....160	W4TFB.....124
CO2BL.....200	W8NXP.....160	W8PUD.....121
KH6OR.....200	W9VSK.....160	VK5LC.....121
CO2BK.....193	DL4BY.....160	H1BXK.....120
W8VDJ.....192	W4ANE.....157	SM3EP.....115
K4AIM.....190	W6ITH.....155	W4EEO.....113
W0JJE.....188	W4EFS.....150	W5DQK.....113
W9GKL.....186	FX3P.....150	W6SAI.....113
W4DCR.....180	W9IOS.....146	W7DAA.....112
W9WHM.....180	W8MRC.....140	W5ERY.....111
Y1YEC.....180	W3JNM.....135	W7KTL.....110
W4NYN.....171	W0GEK.....135	W8ZET.....110
W6SYG.....170		VK2DI.....110

W/VE/VO Call Area and Continental Leaders

W4TO.....253	VE3QD.....210	VE3AA.....191
W8YX.....250	VE4XO.....118	VO6EP.....190
W9AIW.....250	VE5QZ.....140	Z8GBW.....249
VE1HG.....164	VE6VK.....164	4XARE.....222
VE2WW.....192	VE7GI.....224	G2PL.....258

Radioradio

W2BXA.....207	W9AIW.....223	VE7ZM.....178
VE1CR.....180	W4LZO.....222	ZLZCX.....160
W5BCP.....222	VE2WW.....122	OD5AB.....150
W7HIA.....188	VE3KF.....163	E4ZCQ.....220
	VE8NX.....101	

SCM AREC QRS CP SEC OBS TCC OO
Station Activities
 OES AIOPR EC DXCC CLUBS RA OPS RCC
 PAM-WVC NTS-WMC

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Clarence Snyder, W3PYF—SEC: NNT. PAM: TEJ. RM: YAZ. EPA Nets: 3610, 3650 and 3907 kc. Reports on the ARRL Frequency Measuring Test for February show the best score with an average error of 1.5 parts per million was scored by AHZ. TFN was close behind with 3.4. The Harrisburg Amateur Radio Club, with VDA as chairman, will help in the Powder Puff Derby for Harrisburg. A Philadelphia group of XYLS, under AAU, will handle the Philadelphia Area. IW has the auto call monitor on 29,640 kc. 24 hours a day. The Carbon Amateur Radio Club held its third Annual Banquet May 4. DYL has resigned as EC for Philadelphia County and DVB is the new EC for that area. YWW continues to do a good job editing *North Penn Station* for his club. New officers of the Windsor Amateur Radio Club are WWG, pres.; KIK, vice-pres.; CXJ, secy.-treas.; and QHF, act. mgr. The Delaware-Lehigh Amateur Radio Club has been incorporated with NNT. PYF, RUY, FKE and GZR as incorporators. WHK now is signing into ESN and EPA. JNQ has recovered after a trip to the hospital. CUL is vacationing in Florida with her trailer. Valiant and PRO 310, Mac reports CCH as having excellent signals there. BUR now has MARS appointment. LS has been assigned to another project at Philco and SMC will take over as activities director for YDX. YAZ reports heavy activity on the EPA C.W. Net. NF has a new V beam with 500 feet on the leg in operation. EBG, jr. operator of BES, has enough QSLs for DXCC. WQL is taking traffic from NYSEPN. ARK's activity has been low in QO work this month. He reports he put 2 Valiants together, only one for himself which he has been using for DX work. New officers of the Electric City Radio Club of Scranton and vicinity include LZD, pres.; SM, vice-pres.; MRQ, secy.; LJT, treas. TYQ reports that the ECRC was chartered in 1920 and has maintained ARRL affiliation ever since. QBF will be chairman of the FD committee for the DLARC. VVX is giving on-the-air code classes on 145.35 Mc. for the Bucks County Amateur RC. The Mt. Airy V.H.F. Radio Club is now affiliated with ARRL. The club will hold its annual picnic in Fort Washington State Park, Flourtown, Pa., on Aug. 11, according to SAO. Traffic: (Mar.) W3CUL 1091, BFF 361, TEJ 169, YDX 167, NF 148, BBM 115, WHK 95, BNR 82, QLZ 58, PDJ 49, ZRQ 37, FCI 35, YAZ 26, EPL 25, OGD 22, PYF 22, NQB 21, CSP 18, DJL 17, ADE 10, AXA 9, AMC 8, VVX 5, BUR 7, WQL 6, CNO 5, JNQ 5, PUY 5, UEU 3, BES 2, CMN 1. (Feb.) W3WHK 110.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—SCM, Louis T. Croneberger, W3UCR—Section Nets: MDD, 3650 kc. 1900 M-F; MEPN, 3820 kc. MWF 1830, SS 1900. The HCARA and the Aero ARC held a joint meeting at the PGA clubhouse on Mar. 13 with QLG and QKC presiding. The WMRC meeting Mar. 17th was an election night. Officers are 4KMG, pres.; K4KCX, vice-pres.; IHY, secy.-treas.; and BPE, traffic mgr. Also at the meeting 4LXC showed a homemade hand-carried transmitter-receiver for 10 or 6 meters which, from the FB reports received from 6-meter mobiles en route to the club, seems to be doing very well. Welcome to the new National Capital V.H.F. Society. Its officers are DMS, pres.; KMY, vice-pres.; DWU, secy.-treas. Club tests: 50.7 Mc. Tue, 2000. Thurs, 2100, and Sun, 1000; 220.5 Tue, 2030 and Sun, 1100. MSK was elected pres. and PZW vice-pres. of the PVRC to fill the terms of EIV and K4KXV, who are transferring to other climes. Election results of the RCARA: OBR, pres.; MRS, ar. vice-pres.; QFS, jr.

vice-pres.; TKE, secy.; FWP, treas. CDQ, Atlantic Div. Asst. Dir., was active on 20-meter c.w. during the DX Contest. AAY has a new jr. operator, his first. FWP has been appointed Region II FCDA RACES officer, with an FB group of assistants including AIR, AKB, BWT, GKP, NPQ, PYW and QAN, with OMN as consultant for the program. We are happy to see PG at home after a stay in the hospital. He is now on 2 meters with a Communicator and 5 half-waves in phase. NJT is doing an FB job with instruction for Novices and others at the shop. CKR and MLM, representing Montgomery County RACES on 2 and 6 meters, successfully participated in the Potomac River Naval Command Communications exercise. AXZ, Conowingo Village, received his original call after 20 years of inactivity. Bill is using a Viking I on 10- and 80-meter phone and c.w. and will be on all h.f. bands and 2 meters very soon. VFL is on 10 meters with a new 6146 transmitter and on 75-meter phone with a new tower and antenna. KH6BEA is attending school at Bainbridge and is on 10 meters near Conowingo. TUX is back on the air in Annapolis after a stay in Georgia. STL is on 10 meters with a Communicator. IHMP/3 formerly at Aberdeen, now is K6VZA near San Diego. WN3s IWR and KWQ are on 80-meter c.w. with modified Command transmitters. WN3s IXF and IXA (the brother of UAC and the brother's XYL) are working out on 40- and 80-meter c.w. with a homemade 6V8 rig. WN3s JXD, JWM, JZI, LKU and MNE are all heard on 2 meters using Communicators. WN3JWM also is on 40-meter c.w. and is the XYL of FWR. She is working very hard to get her General Class license by Field Day to be a member of Len's 40-meter c.w. crew. N3MNQ is on with a Viking Adventurer. N3JXJ is on 40 meters with a homemade 6AG7-6L6 transmitter. CKR is the new director of MEPN and K4DKG/3 is the new acting secretary. UE and WV advise the MDD is looking for Baltimore and Delaware stations so that traffic into those areas can be expedited. UE made B1T Traffic: (Mar.) W3UE 705, K3WBJ 230, W3CKR 228, ZGN 152, TN 131, UCR 83, K4DKG/3 70, W3WJ 72, PKC 60, WV 58, PQ 57, COK 52, SPL 26, FAP 6, BUD 5, BKE 4. (Feb.) W3WV 54.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: YRW. PAM: ZI. Appearances for the month: QZE as OO and K2PTJ as OBS. EBW was top scorer in the section in the recent YL/OM Contest. Julie also won the award in 1956. K2INQ has received the 20-w.p.m. CP certificate. FB, Peg. SVV, Mercer County EC and Radio Officer, and his able assistants continue to increase in efficiency and county emergency communication planning. YRW, Delaware Valley (2 meter) Net Manager, has issued a very nice bulletin. K2PTJ is assistant manager. The N. J. Fone Net also has issued a fine bulletin. ZI is manager and VDE asst. mgr. The DVRA has elected the following officers: UAE, pres.; K2CDH, vice-pres.; TAM, secy.; and JWA, treas. FQ, Maple Shade, is recovering from a serious illness. BZJ is doing a fine job at the State c.d. headquarters. Gloucester County c.d. meetings are being held in Woodbury. We are looking forward to having an active organization and the appointment of an EC in that county. JKA, recently appointed OPS, also is active in MARS. Harmonics, the SJRA paper, continues to grow in size and interest. QBH and K2PTJ have new towers. K2KTS is doing a fine job instructing in code and theory at the Delaware Twp. High School, in addition to holding class for the would-be KVs at the SJRA. K2WAO/WYRZ has earned BPL for the last eight months. BAY is celebrating his 36th year in amateur radio. All appointees are urged to send reports monthly on Form 1. No reports were received from Southern Counties or the Tri-Cities Clubs. Traffic: WYRZ/2 230, W2HDW 233, K2WAO 156, W2RG 139, K2JGU 104, W2BZJ 54, ZI 43, K2JKA 31, PTJ 30, KN2THX 10, K2CPR 2, HPV 2.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAL. NYS C.W. meets on 3615 kc. at 1800, ESN on 3590 kc. at 1800. NYS Phone on 3925 kc. at 1800. TAR on 3570 kc. at 1700. NYS C.D. on 3509.5 and 3993 kc. at 0900 Sun., TCNP 2nd call area on 3970 kc. at 1900, SRPN on 3980 kc. at 1000, LSN on 3970 at 1600. K2CEH has built a 500W for 6 meters. K2KNV got FS7NT for his 56th county. K2DG has

(Continued on page 86)

SINGLE SIDEBAND

SINGLE sideband in the last eight or nine years has gained a great deal of popularity with the amateur fraternity, and we feel that a further discussion of the subject may be helpful.

SPECTRUM conservation and efficient use of power are the main advantages usually claimed for SSB, though both are the subject of hot discussion these days. A little listening with a receiver such as the SX-101 will, we feel, show that compared to standard AM, several times as many SSB stations can occupy a given number of kilocycles. This is due partly to suppression of the "other sideband" and partly to the absence of heterodyne whistles and squeals due to carriers. The widespread use of voice operated break-in is an added advantage, permitting four and five stations to use the same channel with almost the convenience of face to face conversation.

AS FOR POWER, SSB almost realizes the old dream of voice communication with CW efficiency. Every watt put out by the transmitter is used to communicate; there is no unnecessary carrier or duplicate sideband. This very simplicity makes SSB useful over long hauls where AM fails because of selective fading. The absence of heterodynes allows the natural selectivity of the human ear to pick out the desired signal from heavy interference, again as in CW operation.

WE WENT on the air recently and took a sample survey of as many SSB operators as we could reach, asking them why they like single sideband and what caused them to change over from other types of operation. The answers were enlightening. Many stressed the reduced QRM, others the increased distance they could cover. A few mentioned WAC round tables. Practically all of them like the convenience of voice-operated break-in. After a few hours of asking, one thing became very clear — the underlying reason in every case was more and better QSO's, more fun from operating, and increased ability to render public service when necessary.

AND, after all — aren't these the basic reasons why we took up our hobby in the first place?

CY READ, W9AA

Buell Bailey Jr.

W. J. Halligan W9AC

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**Maximum legal
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Truly tomorrow's concept of electronic equipment design and operating convenience, the Viking Kilowatt provides continuous frequency coverage from 3.5 to 30 megacycles, wide range antenna matching and complete TVI suppression. The compact pedestal contains the complete Kilowatt—rolls out for adjustment or maintenance. Excitation requirements: 30 watts RF and 10 watts audio for AM; 2-3 watts peak for SSB. Completely wired and tested with tubes.

Cat. No. 240-1000 Amateur Net \$1595.00

Matching accessory desk top, back and three drawer pedestal.

Cat. No. 251-101 FOB Cory, Pa. \$123.50



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VIKING "PACEMAKER"—This exciting transmitter is the perfect companion unit to the Viking Kilowatt. More than just a single sideband exciter, the "Pacemaker" is a completely self-contained transmitter as well. 90 watts CW and SSB (P.E.P.) . . . 35 watts AM. Extremely stable, temperature compensated built-in VFO. "Fool-proof" voice controlled operation . . . effectively TVI suppressed . . . instant bandswitching 80, 40, 20, 15 and 10 meters. Pi-network output matches antenna loads from 50 to 600 ohms. More than enough power to drive the Viking "Kilowatt" or grounded-grid amplifiers. With tubes and crystals, less key and microphone. Wired and tested.

Cat. No. 240-301-2 Amateur Net \$495.00

POWER DIVIDER—Provides up to 35 watts continuous dissipation. Designed to provide the proper output loading of the "Pacemaker" when used to drive the Viking Kilowatt Amplifier.

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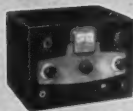
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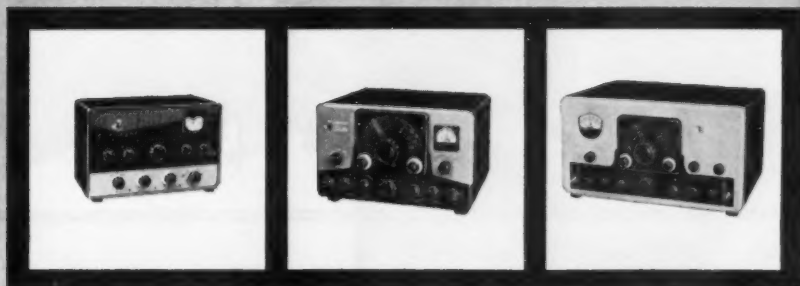


"ADVENTURER"

*Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter delivers it in full measure! Viking transmitters are engineered for outstanding flexibility and performance. Integrated in design from their rugged, highly stable VFO through high efficiency output circuits, Viking transmitters deliver full communication power!

VIKING "ADVENTURER"—Used to earn the first Novice WACI (Worked all continents.) Self-contained, effectively TVI suppressed, rated at 50 watts CW. Instant band-switching 80 thru 10 meters—operates by crystal or external VFO. Break-in keying is clean and crisp. Wide range pi-network output handles virtually any antenna without a separate antenna tuner. Designed for easy assembly. With tubes, less crystals and key.

Cat. No. 240-181-1 Kit Amateur Net \$54.95



VIKING "6N2"—Instant bandswitching on 8 and 2 meters, this compact VHF transmitter is rated at 150 watts CW and 100 watts phone. Effectively shielded and TVI suppressed—may be used with the Viking "Ranger", Viking I, Viking II or similar power supply/modulator combinations capable of at least 6.3 VAC at 3.5 amp., 300 VDC at 70 ma., 300 to 750 VDC at 200 ma. and 30 or more watts audio. May be operated by built-in crystal control or external VFO with 8-9 mc. output. With tubes, less crystals, key and microphone.

Cat. No.	Amateur Net
240-201-1 Kit	\$119.50*
240-201-2 Wired	\$159.50*

*Price subject to revision.

VIKING "RANGER"—This outstanding 75 watt CW or 65 watt phone transmitter also serves as an RF and audio exciter for high power equipment. As an exciter, it will drive any of the popular kilowatt level tubes—no internal changes necessary to switch from transmitter to exciter operation. Self-contained, instant bandswitching 160 through 10 meters—operates by extremely stable, built-in VFO or crystal control—effectively TVI suppressed. Easily assembled—with tubes, less crystals, key and microphone.

Cat. No.	Amateur Net
240-161-1 Kit	\$214.50
240-161-2 Wired	\$293.00

VIKING "VALIANT"—Designed for outstanding flexibility and performance. 275 watts input on CW and SSB (P.E.P. with auxiliary SSB exciter) 200 watts AM. Instant bandswitching 160 through 10 meters—operates by built-in VFO or crystal control. Pi-network tank circuit matches antenna loads from 50 to 600 ohms—final tank coil is silver-plated. TVI suppressed—timed sequence keying—high gain push-to-talk audio system—low level audio clipping—built-in low pass audio filter—self-contained power supplies. With tubes, less crystals, key and microphone.

Cat. No.	Amateur Net
240-104-1 Kit	\$349.50
240-104-2 Wired	\$439.50

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Most authorized Johnson
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Often as little as 10% down puts you
on the air, and your used equipment
(especially if it's Johnson) is always
worth top dollar in trade.



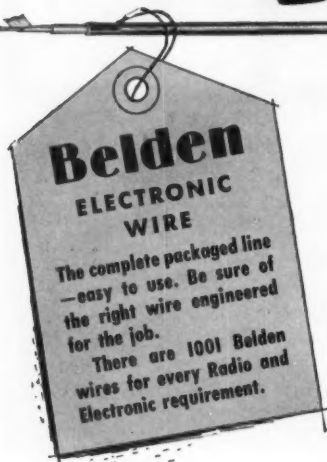
E. F. Johnson Company

2805 SECOND AVENUE SOUTHWEST • WASECA, MINNESOTA

**If it's worth
engineers'**



Mil. Spec.



**...it's worth
engineered
electronic wire**

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WIREMAKER FOR INDUSTRY
SINCE 1902
CHICAGO

6-8

Magnet Wire • Lead and Fixture Wire • Power Supply Cords, Cord Sets and Portable Cord • Aircraft Wires
Welding Cable • Electrical Household Cords • Electronic Wires • Automotive Wire and Cable

HEATHKITS®



*Top quality
ham equipment
in kit form . . .
designed especially to
meet your requirements!*

Heath amateur radio gear is designed by hams—for hams, to insure maximum "on the air" enjoyment. Good design and top-quality components guarantee reliability. Heathkits are easy to build and are easy on your budget! You save by dealing direct, and you may use the Heath Time Payment Plan on orders totaling \$90.00 or more. Write for complete details.

HEATHKIT

DX-100

TRANSMITTER KIT

PHONE
AND CW

- ▶ Phone or CW—160 through 10 meters.
- ▶ 100 watts RF on phone—120 watts CW—parallel 6146 final.
- ▶ Built-in VFO—pi network output circuit.
- ▶ Easy to build—TVI suppressed



MODEL DX-100

\$189⁵⁰

\$18.95 dwn., \$15.92 mo.

Shpg. Wt. 107 Lbs.

Shipped motor freight unless otherwise specified.

\$50.00 deposit required on c.o.d. orders.

The Heathkit DX-100 phone-CW transmitter offers features far beyond those normally received at this price level. It has a built-in VFO, built-in modulator, and built-in power supplies. It is TVI suppressed, and uses pi network interstage coupling and output coupling. Matches antenna impedances from approximately 50 to 600 ohms. Provides a clean strong signal on either phone or CW, with RF output in excess of 100 watts on phone, and 120 watts on CW. Completely bandswitching from 160 through 10 meters. A pair of 1625 tubes are used in push-pull for the modulator, and the final consists of a pair of 6146 tubes in parallel. VFO dial and meter face are illuminated. High-quality components throughout! The DX-100 is very easy to build, even for a beginner, and is a proven, trouble-free rig that will insure many hours of enjoyment in your ham shack.



HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT **DX-35** TRANSMITTER KIT

PHONE AND CW

This transmitter features a 6146 final amplifier to provide 65 watt plate power input on CW, with controlled-carrier modulation peaks up to 50 watts on phone. Modulator and power supplies are built in, and the rig covers 80, 40, 20, 15, 11 and 10 meters with a single band-change switch. Pi network output coupling provides for matching various antenna impedances. Employs 12BY7 oscillator, 12BY7 buffer and 6146 final. Speech amplifier is a 12AX7, and a 12AU7 is employed as modulator. Panel control provides switch selection of three different crystals, reached through access door at rear. Panel meter indicates final grid current or final plate current. A perfect low-power transmitter both for the novice or the more experienced amateur. A remarkable power package for the price. The price includes tubes, and all other parts necessary for construction. Comprehensive instruction manual insures successful assembly.



MODEL DX-35

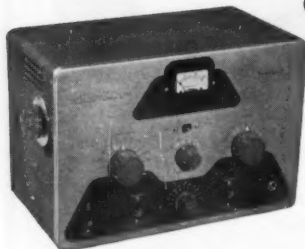
\$56⁹⁵

Shpg. Wt.
24 Lbs.

\$5.70 dwn., \$4.78 mo.

- ▶ Phone or CW—80 through 10 meters.
- ▶ 65 watts CW—50 watts peak on phone—6146 final amplifier.
- ▶ Pi network output to match various antenna impedances.
- ▶ Tremendous dollar value—easy to build.

BRAND NEW



MODEL DX-20

\$35⁹⁵

\$3.60 dwn., \$3.02 mo.

Shpg. Wt. 18 Lbs.

HEATHKIT **DX-20** CW TRANSMITTER KIT

- ▶ Designed exclusively for CW work.
- ▶ 50 watts plate power input—80 through 10 meters.
- ▶ Pi network output circuit to match various antenna impedances.
- ▶ Attractive and functional styling—easy to build.

Here is a straight-CW transmitter that is one of the most efficient rigs available today. It is ideal for the novice, and even for the advanced-class CW operator. This 50 watt transmitter employs a 6DQ6A final amplifier, a 6CL6 oscillator, a 5U4GB rectifier and features one-knob bandswitching to cover 80, 40, 20, 15, 11 and 10 meters. It is designed for crystal excitation, but may be excited by an external VFO. A pi network output circuit is employed to match antenna impedances between 50 and 1000 ohms. Employs top-quality parts throughout, including "potted" transformers, etc. If you appreciate a good signal on the CW bands, this is the transmitter for you!



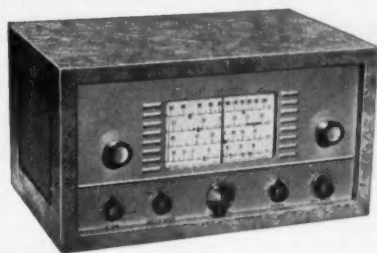
HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.

HEATHKIT

COMMUNICATIONS-TYPE, ALL BAND

RECEIVER KIT



This receiver covers 550 kc to 30 mc in four bands, and is ideal for the short wave listener or beginning amateur. It provides good sensitivity and selectivity, combined with fine image rejection. Amateur bands are clearly marked on the illuminated dial scale. Features transformer-type power supply—electrical band spread—antenna trimmer—separate RF and AF gain controls—noise limiter—headphone jack—and AGC. Has built-in BFO for CW reception.

MODEL AR-3

\$29⁹⁵

incl. excise tax
(less cabinet)

\$3.00 dwn., \$2.52 mo.

Shpg. Wt. 12 Lbs.

CABINET: Fabric covered cabinet with aluminum panel as shown. Part 91-15A. Shipping Wt. 5 Lbs. \$50 dwn., \$42 mo.

\$4.95

A HEATHKIT VFO KIT MODEL VF-1

Covers 160, 80, 40, 20, 15, 11 and 10 meters with three basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Requires 250 VDC at 15 to 20 ma, and 6.3 VAC at 0.45A. Incorporates regulator tube for stability and illuminated frequency dial. Shpg. wt. 7 lbs. \$1.95 dwn., \$1.64 mo. **\$19.50**

B HEATHKIT GRID DIP METER KIT MODEL GD-1B

Continuous coverage from 2 mc to 250 mc with prewound coils. 500 ua panel meter for indication. Use to locate parasitics, for neutralizing, determining resonant frequencies, etc. Will double as absorption-type wavemeter. Shpg. wt. 4 lbs. \$2.00 dwn., \$1.68 mo. **\$19.95**

C HEATHKIT ANTENNA IMPEDANCE METER KIT MODEL AM-1

The AM-1 covers 0 to 600 ohms for RF tests. Functions up to 150 mc. Used in conjunction with a signal source, will determine antenna resistance and resonance, match transmission lines for minimum SWR, determine input impedance, etc. Shpg. wt. 2 lbs. \$1.45 dwn., \$1.22 mo. **\$14.50**

D HEATHKIT "Q" MULTIPLIER KIT MODEL QF-1

Functions with any receiver having IF frequency between 450 and 460 kc that is not AC DC type. Operates from receiver power supply, requiring only 6.3 volts AC at 300 ma (or 12.6 vac at 150 ma), and 150 to 250 vdc at 2 ma. Simple to connect with cable and plugs supplied. Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of approximately 4000. Shpg. wt. 3 lbs. \$1.00 dwn., \$.84 mo. **\$9.95**



HOW TO ORDER...

It's simple—just identify the kit you desire by its model number and send your order to the address listed below. Or, if you would rather budget your purchase, send for details of the Heath Time Payment Plan for orders totaling \$90.00 or more.



HEATH COMPANY BENTON HARBOR 9, MICHIGAN

A Subsidiary of Daystrom, Inc.



"I am now using the Gotham V80 vertical antenna with only 55 watts, and I am getting fantastic reports from all over the world". VP1SD

ALL-BAND VERTICAL ANTENNAS

GOTHAM'S sensational new vertical antennas give unsurpassed multi-band performance. Each antenna can be assembled in

less than two minutes, and requires no special tools or electronic equipment. In the V160, resonance in the 160, 80, 75, and 40 meter bands is secured through use of the proper portion of the loading coil. Yet, when the coil is eliminated or bypassed, the V160 will operate on 20, 15, 10 and 6 meters! The same idea applies to our V80 and V40 multi-band verticals. No guy wires needed; rugged, occupies little space, proven and tested.



Simple design and superior materials give all-band operation, and effective, omni-directional radiation. Gotham verticals are rugged, with low initial cost and no maintenance. Guaranteed Gotham quality at low Gotham prices. Perfect for the novice with five watts or the expert with a kilowatt.

Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. QST
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 vertical for 40, 20, 15, 10, 6 meters.....\$14.95 ☐
V80 vertical for 80, 75, 40, 20, 15, 10, 6 meters.....\$16.95 ☐
V160 vertical for 160, 80, 75, 40, 20, 15, 10, 6 meters.....\$18.95 ☐

Name.....

Address.....

City.....Zone.....State.....

QUALITY MATERIAL

Brand new mill stock aluminum alloy tubing with Aluminite finish for protection against corrosion. Loading coils made by Barker & Williamson.

ALL-BAND OPERATION

Switch from one band to another. Operate anywhere from 6 to 160 meters. Work the DX on whatever band is open.

EASY ASSEMBLY

Less than two minutes is all you need to put your vertical together. No special tools or electronic equipment required. Full instructions given.

SIMPLE INSTALLATION

Goes almost anywhere. On the ground, on the roof, or outside your window. No trick fittings or castings needed.

AMAZING PERFORMANCE

Hundreds of reports of exceptional DX operation on both low and high power. You will work wonders with a Gotham vertical.

NO GUY WIRES

Our design eliminates unsightly guy wires. You save time, trouble, space and money by avoiding guy wires.

PROVEN DESIGN

Over a thousand Gotham verticals are on the air — working the world and proving the superiority of Gotham design.

AND THE PRICE IS RIGHT!

"I worked LU3ZS on Half Moon Island in Antarctica on Dec. 26 at 21150 Kc. I was using my Gotham V80 vertical antenna and only 35 watts." KN5GLI



How to order
Send check or money order directly to Gotham or visit your local distributor. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

GOTHAM

1805 PURDY AVENUE
MIAMI BEACH 39, FLA.

YOU COULD WORK WONDERS IF YOU HAD A GOTHAM BEAM!

Study these specifications—compare them—and you too will agree, along with thousands of hams, that GOTHAM beams are best!

TYPE OF BEAM. All Gotham beams are of the full half-wave plumber's delight type; i.e., all metal and grounded at the center. No wood, tuning stubs, baluns, coils, or any other devices are used.

MORE DX CONTACTS

GAIN. Gotham beams give the maximum gain obtainable. Our 2-element beams give a power gain of four (equivalent to 6 db.); our 3-element beams give a power gain of seven (8.1 db.); and our 4-element beams give a power gain of nine (9.6 db.).

THE DESIGN IS PROVEN

FRONT-TO-BACK RATIO. We guarantee a minimum F/B Ratio of 19 db. for any of our 2-element beams; 29 db. for any of our 3-element beams; 35 db. for 4-element beams.

THOUSANDS IN DAILY USE

MATCHING. Matching of the transmission line to the beam is extremely simple and quick. No electronic equipment or measuring devices are required.

ALCOA QUALITY ALUMINUM

ASSEMBLY AND INSTALLATION. No special tools are required for assembly and installation. Entire job can be done by one man in less than an hour. Full instructions are included with each beam.

CONSISTENT PERFORMANCE

MAST. Any Gotham beam can be mounted on a simple pipe mast. Diameter of the pipe should be between $\frac{3}{4}$ " and $1\frac{3}{4}$ ".

QUICK INSURED DELIVERY

STANDING WAVE RATIO. A very low SWR of approximately 1.5 to 1 will result from following the instruction sheet, depending on the height above ground and the surrounding area. If an SWR indicator is available, Gotham beams can be quickly and easily adjusted to 1.1.

YOU WILL WORK THE WORLD

STANDARD AND DELUXE BEAMS. Standard beams in the 6, 10 and 15 meter bands use $\frac{3}{8}$ " and $\frac{1}{2}$ " tubing elements; the deluxe models for these bands use $\frac{1}{2}$ " and 1". In 20 meter beams, the standard has a single boom, while the deluxe uses twin booms.

TRIBANDER BEAMS

Do not confuse these full-size tribander beams with so-called midgets. The Tribander has individually fed (52 or 72 ohm coax) elements and is not frequency sensitive, nor does it have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get terrific gain is to use a Gotham Tribander Beam.

6-10-15 TRIBANDER.....\$39.95
10-15-20 TRIBANDER..... 49.95

HOW TO ORDER: Send check or money order directly to GOTHAM or order from your local distributor. Immediate shipment by Railway Express, charges collect.

You could work KC4USA in the Antarctica with only 90 watts on 15 meters, as W4SK did.

You could work over 100 countries with a three element 10 meter beam, and be a top man on the frequency, like W9DEI.

You could work terrific skip and DX with reports of 20 over 9, with as little as 36 watts input on 20 meters, as W. E. Woods did.

You could work 29 states in three months on six meters, with low power, as K2LHP did.



Airmail Order Today — We Ship Tomorrow

GOTHAM Dept. GST
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Enclosed find check or money-order for:

TRIBANDER

☐ 6-10-15 \$39.95 ☐ 10-15-20 \$49.95

6 METER BEAMS

<input type="checkbox"/> Std. 3-El Gamma match 12.95	<input type="checkbox"/> T match 14.95
<input type="checkbox"/> Deluxe 3-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Std. 4-El Gamma match 16.95	<input type="checkbox"/> T match 19.95
<input type="checkbox"/> Deluxe 4-El Gamma match 25.95	<input type="checkbox"/> T match 28.95

10 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 11.95	<input type="checkbox"/> T match 14.95
<input type="checkbox"/> Deluxe 2-El Gamma match 18.95	<input type="checkbox"/> T match 21.95
<input type="checkbox"/> Std. 3-El Gamma match 16.95	<input type="checkbox"/> T match 18.95
<input type="checkbox"/> Deluxe 3-El Gamma match 22.95	<input type="checkbox"/> T match 25.95
<input type="checkbox"/> Std. 4-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Deluxe 4-El Gamma match 27.95	<input type="checkbox"/> T match 30.95

15 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 19.95	<input type="checkbox"/> T match 22.95
<input type="checkbox"/> Deluxe 2-El Gamma match 29.95	<input type="checkbox"/> T match 32.95
<input type="checkbox"/> Std. 3-El Gamma match 26.95	<input type="checkbox"/> T match 29.95
<input type="checkbox"/> Deluxe 3-El Gamma match 36.95	<input type="checkbox"/> T match 39.95

20 METER BEAMS

<input type="checkbox"/> Std. 2-El Gamma match 21.95	<input type="checkbox"/> T match 24.95
<input type="checkbox"/> Deluxe 2-El Gamma match 31.95	<input type="checkbox"/> T match 34.95
<input type="checkbox"/> Std. 3-El Gamma match 34.95	<input type="checkbox"/> T match 37.95
<input type="checkbox"/> Deluxe 3-El Gamma match 46.95	<input type="checkbox"/> T match 49.95

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

NEW! RUGGEDIZED HI-GAIN 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy boom mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

<input type="checkbox"/> Beam #R6 (6 Meters, 4-El).....	\$38.95
<input type="checkbox"/> Beam #R10 (10 Meters, 4-El).....	40.95
<input type="checkbox"/> Beam #R15 (15 Meters, 3-El).....	49.95

Name.....
Address.....
City.....Zone.....State.....

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We try to top all offers. Your trade-in makes down payment. Write for our offer.

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90 days open account or 10% down—up to 20 months. We finance. Payment within 90 days cancels all interest. Write for details.

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Nearly all makes and models—Big Savings—Ten day trial—90 day warranty. 90-day full trade back on new apparatus. Write for bulletin.

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Your inquiries and orders handled same day. Write, phone or wire us.

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Henry has everything in the amateur equipment field, new or used . . . transmitters and receivers.

HENRY HAS THESE HALLICRAFTER ITEMS IN STOCK FOR IMMEDIATE SHIPMENT

Hallicrafter S38D	\$49.95
Hallicrafter S94	59.95
Hallicrafter S95	59.95
Hallicrafter SX104	89.95
Hallicrafter SX105	89.95
Hallicrafter S53A	89.95
Hallicrafter S85	119.95
Hallicrafter SX99	149.95
Hallicrafter SX100	295.00
Hallicrafter SX62A	349.95
Hallicrafter HT33	775.00
Hallicrafter R46B speaker.....	17.95

Complete stock of all transmitters, receivers, antennas, rotators, towers, parts, accessories, equipment. Henry has ALL the new equipment first.

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"WORLD'S LARGEST DISTRIBUTORS
OF SHORT WAVE RECEIVERS"



MODEL SX-101

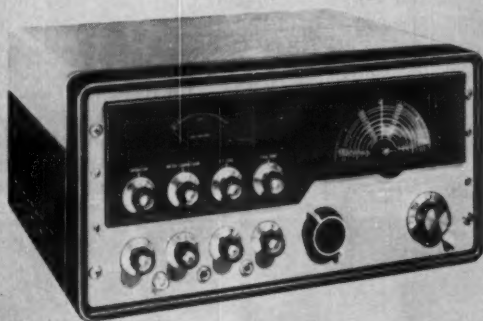
\$39.95 down
20 monthly payments
of \$19.50
CASH PRICE \$395.00

Big, rugged, the SX-101 utilizes the heaviest chassis in the industry . . . an amazing marvel of stability . . . designed to out-perform any other model in the market today. Complete coverage of seven ham bands—160, 80, 40, 20, 15, 11 and 10 meters. Conforms to F.C.D.A. specifications.

hallicrafters

HT-32 AMATEUR BAND TRANSMITTER

\$67.50 down
20 monthly payments
of \$33.36
CASH PRICE \$675.00



Complete table top, high efficiency transmitter providing S.S.B. or CW output on 80, 40, 20, 15, 11 and 10 meter bands. Incorporates exclusive features in S.S.B. generation techniques: (1) Hallicrafter exclusive—piezo electric filter which cuts unwanted sideband 50 db or more; (2) extremely stable, newly developed bridged—tee modulator.

Write, wire, phone or visit either store today.

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Granite 7-6701

11240 West Olympic Blvd. Los Angeles 64



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W6UCU
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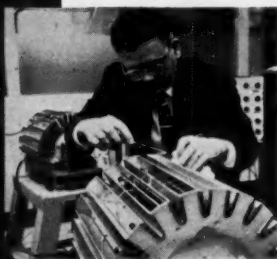
Do you need a degree for success in Electronics?



"Not necessarily," says Dick Brani, Instructor in Project Sage at IBM—Kingston, New York. "Oh, sure—I'm aware of my limitations to design electronic equipment—that's the big advantage of a formal degree. But I am qualified to maintain it. The point is . . . there are many management positions in IBM for men like myself, and I'm convinced that comparable positions elsewhere would probably require an engineering degree."

Some years ago, IBM took the initiative with respect to technical training within its own organization. It realized, even then, that a great number of intelligent and capable men were falling by the wayside because they lacked 4 years of college engineering. Statistics indicated that because of financial difficulty or improper high-school preparation, close to 50% of the potential engineers in the country became lost in the educational shuffle. While some people ignored or bemoaned the fact, IBM did something about it. Consequently, men like Dick Brani now enjoy satisfying, more rewarding work than ever before.

Great Interest in Mathematics. While Dick was attending high school, his principal academic interest was mathematics. And, like many other young men of that time, Dick was realistic about his future. He decided his best bet might be business accounting. When Dick graduated, he accepted a position with a New York banking firm. It was not until he entered the Army that he had the opportunity to pursue a more advanced form of mathematics—an A.S.T.P. training program at Lehigh University. This all-too-brief experience convinced



Dick trouble shooting
Magnetic Drum Frame.



He studies computer
pluggable unit.

DATA PROCESSING • ELECTRIC TYPEWRITERS

Dick that he should make his career in a field related to electrical technology.

Postwar Education. Discharged with the rank of Staff Sergeant, Dick returned home to marry a girl he had met at Lehigh. During this period, he successfully supported his family selling various lines of food. In the evening, however, Dick continued his study of radio, TV, and electronics at the Allentown Branch of the Temple Institute. In two years' time, he graduated and secured an F.C.C. license—his technical career began to take shape.

IBM Looks Especially Good. Glancing through an issue of *Time Magazine* one evening, Dick happened to read an article about Thomas J. Watson, Jr., the president of IBM. The story emphasized Mr. Watson's great faith in the future of electronic computers... the wonderful promise it holds for the ambitious, intelligent young man. Later, Dick spotted a classified ad describing IBM's association with Project Sage. That was all Dick Brani needed.

Asked to Become an Instructor. Three-quarters of the way through his nine-month computer systems course, Dick was invited to remain at Kingston as an instructor. "It was like a bolt out of the blue," he recalls. "I knew I'd enjoy teaching, but I always thought it was out of the question. I accepted all right. I can't tell you how much I've enjoyed helping these fellows and watching them grow within the organization. Right now, there's a fellow in my class whose education is limited to correspondence school. He's in the top third of his class, and has a real future with IBM—all because he has the native talent and is willing to work."

What Does Dick Brani Teach? "Actually, I teach three separate courses in field engineering. One is computer systems testing, which is for the more advanced student. It lasts for 33 weeks—a long

time, perhaps, but it's well worth it. Another is a program of 24 weeks' duration that deals with computer input-output units. Finally, I teach a course in computer units displays. This also lasts for 24 weeks. Each one of these courses is an education in itself." Experience has shown that IBM's educational programming is most successful. Men accepted receive their training with no strings attached. Upon graduation the road to success is wide open in all divisions of the corporation.

What About Dick's Future? "Well, right now, I'm doing work that most technicians couldn't touch with a ten-foot pole. I guess it's a matter of approach, but I know of few companies other than IBM where technicians are actually doing engineering work. Both kinds of companies will get the job done, but IBM prefers to think in terms of the man, encouraging him to grow into more responsibility. You might say that IBM gets more out of the man. In the final analysis, it seems a lot more efficient from the corporation's and employee's viewpoint. Personnel policy at all levels—management, engineering, or technical—is the same. The future is wide open."

What About You? Permanent opportunities in the nationally important Project Sage program are still growing. If IBM considers your experience equivalent to an E.E., M.E. or Physics degree, you'll receive 8 months' training, valued at many thousands of dollars as a Computer Systems Engineer. If you have 2 years' technical schooling or the equivalent experience, you'll receive 6 months' training as a Computer Units Field Engineer, with opportunity to assume full engineering responsibility. *Assignment in area of your choice.* For more information, please write to: Nelson Heyer, Dept. 12806 IBM, Kingston, New York. You'll receive a prompt reply.



Dick explains computer logic to a Systems Class.



At the Operating Console.



At home Dick plays with one of his three children.

IBM

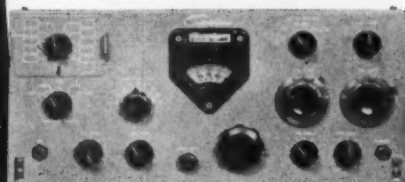
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Collins

Available
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HARVEY

KWM-1



first SSB transceiver for complete Mobile or Fixed use

NEW and FIRST—that's the best description of the revolutionary KWM-1, the first mobile transceiver to offer SSB. And this 14-30 mc 200 watt package is equally adaptable to fixed use with simple removal from a convenient mounting tray under the dashboard.

Utilization of common components in both transmitting and receiving functions results in a saving of both space and cost and, in the case of frequency-determining components, assures exact coincidence of transmitted and received signals. Frequency stability and readability is comparable to that of the KWS-1/75A-4. The panel meter serves as an S-meter during receive and multimeter during transmit. Break-in CW using VOX circuits is built-in, as is a side tone for monitoring CW. Ten 100 kc bands are available anywhere in the 14-30 mc range.

NET PRICES

KWM-1 Transceiver	\$770.00
516E-1 12 vdc Power Supply	248.00
516F-1 115 vac Power Supply	103.00
3128-2 Speaker Console with phone patch and directional wattmeter	146.00
3128-1 Speaker in cabinet	25.00
351D-1 Mobile Mounting Tray	22.00

Get your order in now for early delivery.

HARVEY is known the world over, wherever Hams operate, as a reliable source for Ham Equipment.

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Subject to change without notice.

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Generous
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Talk SWAPS
and DEALS
write...
or call

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SAME DAY AS RECEIVED**
Include with your payment a generous
allowance for shipping charges—the
excess will be promptly refunded.

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CO., INC.**

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(Continued from page 82)

built a p.p. 807 c.w. rig exclusively for net operation. BKC is building a 4-250A final as described in the '55 Handbook. ILVQ, ARRL Asst. General Manager, spoke at the March meetings of both RAWNY, Inc., and RAGS. RAWNY's new officers are TAX, pres.; CUU, vice-pres.; ICZ, rec. secy.; JPE, corr. secy.; K2GGBY, treas. New RAGS officers are HIL, pres.; K1LGA, 1st vice-pres.; and QAR, 2nd vice-pres. K20RH is president of the newly-organized Marathon ARC. K2RKP is president of the Ithaca H.S. ARC. Congratulations to the North County Radio Club in Potsdam, which is now affiliated with ARRL. Your SCM and 3YA attended the Ithaca Mike and Key Club Hamfest attended by well over 100. K2GQU is president of the organization. K2SKB worked Texas with 5 watts and a 20-ft. piece of wire in the 40-meter Novice band. K2GUG is constructing a rig using p.p. 833As in the final. The ARATs had the FCC engineer give a talk on TVI at a recent meeting. KN2TCP is organizing a ham club at U. of R. and could use some expert advice. LXE is building a 106-element 2-meter beam. Glad to see Clara, RUF, back in the traffic department again. VLIH visited the Niagara Frontier v.h.f. installations in conjunction with a talk on IGY-PRP to the gang in the Buffalo Area. The NYS C.W. Net needs stations in the counties of Allegheny, Cattaraugus and Steuben. UTH has a new NC-300. OZR is s.s.b. mobile with a homebrew crystal lattice filter. K2HUK has a pair of 417As for his 2-meter converter. The ARATs holds code practice on 6 meters Mon., Wed. and Fri. at 2100. The following have earned NYSPTEN Net certificates: K2BDR, TPB, UCF, PJU, PPK, HJP, PYM and LUM. The Central New York Council of Radio Clubs invites Field Day competition. K2MLT is on 6 meters. EMW also is going on 6 meters, but is not going to give up 20-meter DX. BBZ is on 6 meters with cathode modulation. The following are on 6 meters in the Syracuse Area: K2DBS, UTI, TET, SZM, TKJ, W2WZ, TBQ and SEB. The 13th annual Oneida Hamfest and Ladies Night will be held Sat., Sept. 28, 1957. Contact RXW for details. Traffic: K2IYP 404, K1R 137, W2ZRC 128, RUF 117, K2GWN 115, KNV 69, W2OE 46, K2QIW 43, DSR 40, W2EMW 39, K2DGG 22, PJU 14, W2FEB 10, K2HUK 4.

WESTERN PENNSYLVANIA—SCM, John F. Wojtkiewicz, W3GJY—SEC, OMA, RM: UHN, NUG, GEG and NRE, PAMS: AER and TOC. Thanks are in order to NCD and UHN for the very fine job done while they handled the SCM and Asst. SCM posts. Your SCM has been appointed Asst. Director to YA for WPA, RTB, with 145 worked and 128 confirmed on 14-Mc. c.w., is boosting his total. CRA is sporting a 60-ft. tower. WIQ does a nice job handling traffic, as does LXQ. A new DX society has sprung up for WPA DXers known as the Western Penna. DX Society and invites new memberships. Contact RTB or RBF for further information. The Steel City ARC has a new clubhouse planned. NKM has a new KWS-1 and 10- and 20-meter Telrex beams. OKU works rare DX with his s.s.b. sigs. New SCARC members are BEX, EOR and DQR. SJJ is back on with a new Globe Scout. The meeting of the Allegheny Kiski ARA featured a c.d. film as well as one on transistors. Crystals for the c.d. net have been donated by the New Kensington c.d. director and have been distributed to the club's mobileers. YA has a new 1-kw. rig on all bands but has TVI when it is used on A-3. UHN is recuperating after an operation. YOZ made VAC in the recent DX Test. BZR is the new EC for Fayette County. NVS and UGV are new OOs. YCG and TAS are new ORSs. Get "loose" ends taken up for upcoming FD Tests, June 22-23. BSN News: STB is a member of the hamfest committee. GEN contacted K4LIB/VQ. WHA and BCL are out of the hospital now. SPZ and SIR paid a visit to FBX who has a 120-ft.-high tower. ZGV is giving 40-meter mobile a whirl. ZCP and OPF are planning higher power. EUL runs 9 watts. MMF works 10 meters with a new DX-35 and Wonder Bar antenna. UJP reports ham radio favorably reported on by Ed Morgan of ABC Radio during a nationwide broadcast Mar. 8. KWL works DX on 14 Mc. with an indoor antenna. BSF soon will be operating from a new trailer. Erie ARC news: WJA purchased a new 60-ft. tower. JTF, ALD and JOQ are using the new "Halo" antenna for 6 meters. YWL is a proud father for the 6th time. KVB is thinking about going mobile. POS has a new Valiant. PIY reports that his XYL is recuperating from a recent illness. QPB is head man of the club's FD committee. LSS arranged for presentation of a fine movie illustrating mobile communications at the last meeting. TLA is putting out a strong signal from his mobile rig with increased power. QPP received a surprise report while fooling around with his mobile supply. MS and LKJ are boosters of s.s.b. Novice news: WN3LPC is a new ham at Erie and has a new SX-100. KPM is building a transistor transmitter. IJD has a

(Continued on page 108)



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Offers 115 V ac-dc or battery operation over a 5-band coverage of from 150 kc to 23 mc, including a special marine band from 150 kc to 400 kc covering DF frequencies. Also receives low frequency aviation beams and weather reports. Incorporates two built-in antennas, ferrite loop for DF and BC bands, and whip for SW bands. A terrific receiver for voice or CW at a low price.

FEATURES:

- 115 V ac-dc operation
- Battery-operated
- 5-band coverage... 150 kc to 23 mc
- Electrical bandspread with logging scale
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- Ferrite-loop antenna for DF and BC bands
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- 4-band coverage... 540 kc to 40 mc
- Calibrated electrical bandspread for 10, 11, 15, 20, 40 and 75/80 meters
- 12" slide-rule dial with combination edge and backlighting
- "S" meter on front panel
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How's DX?

(Continued from page 65)

VR2DB, c/o Broadcasting Svc., Suva, Fiji Islands
ex-VS1ET (to ZLIANP)
VS2FM, P. J. McNicol, North Labis Estate, Labis, Johore, Malaysia
W4DQA/KS4 (to W4DQA)
W9NTJ/KG6, R. R. Deitering, CTC USN, Nav. Comm. Sta., Navy 926, Box 130, FPO, San Francisco, Calif.
WG6AGY, Nav. Comm. Sta., Box 115, Navy 926, FPO, San Francisco, Calif.
WL7BWH, H. A. Williams, Box 311, AAC Hq. Sq., APO 942, Seattle, Wash.
XZ2AO, Box 611, Rangoon, Burma
Y0SLC, Box 12, Baia Mare, Roumania
Y0IOZ, S. Kalapisa, Box 120, Pancevo, Yugoslavia
ZC4JX, P.O. Box 210, Famagusta, Cyprus
ZC5DA, c/o RAF, Labuan, Br. No. Borneo
ex-ZC5GN-VS4BD-VSSBS-VS1GN (to G3JFC)
ZC5RF, c/o RAF, Labuan, Br. No. Borneo
ZC5WT, c/o RAF, Labuan, Br. No. Borneo
ZD4BF, Dr. J. R. S. Innes, P.O. Box 36, Nsuta/Wassaw, Ghana
ZS7H (to ZS6ALZ)
5A3TH, T/Sgt. Thos. R. Howell, P.O. Box 372, 1950th AACs Sqn., APO 231, New York, N. Y.

Whence:

Asia — By their skywires shall ye know them! W4HVU (ex-J8AAA-HL1AA-DL4LU) traipsed across the waters to visit numerous DX contacts. "When I got to Burma I found it difficult to locate any hams. While driving along one of the main roads in Rangoon I noticed a cubical quad and, upon investigating, found XZ2AD, a Burmese who speaks English like the rest of us. He took me to a rather exclusive club for a grand lunch of Burmese food and excellent Mandalay beer. Incidentally, there were no flying fishes playing anywhere near Mandalay, Kipling to the contrary." Guy hopes to sign an H call after finishing his current Pentagon tour this month. . . . W3VKD advises, "487WP has contacted 1050 U. S. A. stations in 42 states with confirmations from 40. He still needs Mont., Nev., N. Mex., N. Dak., Utah and Wyo." . . . From 487GE, now closing down in favor of home and G3JTG: "The W/K operating is good; in fact very good, and something a lot of other countries could well copy. One criticism regarding Novice stations: I answered dozens calling CQ DX only to hear them go back to other Novices! With conditions as good as they are, especially on 21 Mc., U. S. A. Novices ought to have a good look around for DX stations answering their calls before answering other Novices — or what's the use of their adding 'DX' to CQ?" Ted winds up his Ceylon DX experiences with a respectable 151/126 record on 50 watts to an 807 feeding a unidirectional phased array and he anticipates renewing ham friendships from his Sussex station soon. . . . W1VG reports HZ1AB's KWS-1 very available on 20 meters these days. . . . "I am close to DXCC now and you will hear KA3CY burning the midnight oil often. No KA ever has made it. It won't be too long before I'll be back in the States operating W3MDI/7." KA3CY is another quad fan. . . . Tune, men, tune. "Every day-break around 7050-7100 kc. JA phones call 'CQ America, tuning the U. S. phone band' but I never hear W/Ka answer them." This from K6DV who also reports that the Tokyo area's three TV stations regale Oriental audiences with such kinescopes as *District Attorney*, *Superman* and *Jungle Jim*. . . . C3MH apparently has broken the drought of Red China ham radio, W6YY reporting Shen still active around 14,199 kc. at 1600 GMT. John also comments on the dearth of Iwo activity; Chichi's KG6IG keeps Bonina-Volcanoes on the DXCC map singlehandedly. . . . W6ITH confirms that Ceylon and Britain gingerly spar over military base rights in the Maldives while the Islands sultanate takes a dim view of the whole idea. . . . VS6GJN tells W6FE he's going home shortly but hopes to land Ark. and La. for his full 48. Appropriate W5s and K5s will find Art near 21,050 kc. at 0300-0400 GMT. . . . Old Hong Kong hand VS6CG soon ships to Canada.

Africa — SARL, in view of bogus ZD9AF work, will request that licensing authorities not assign the call in the future. "So far there have been ZD9a AB AC AD AE and AX licensed, with only AC AE and AX now active." ZD9AX, XYL of ZD9AC, seldom hits the air, for she's plenty QRL with twin jr. ops. . . . Since last fall W5TP has had 41 contacts with ZS5AM and 34 QSOs with ZS6IF. . . . W7FBD informs that ZS7D QRTs for removal to ZS6-land. . . . In QSO with W2HJM EL2L mentioned need of 7-Mc. crystals. . . . W4YT ARRL SEC. E. Fla., reports that W4HQW worked ZESJA on his opening call in each of the 1956 and '57 ARRL DX Contests. And the ZES's QSL confirming the first of these QSOs arrived just two days before the second. . . . ZD-4s are doing double duty in the QSL/QSO department right now. All the guys they worked before Gold Coast became Ghana are piling up again in pursuit of additional DXCC credit.

W4IYC acquired one such two-country QSL from ZD4BF whose a.s.b. is a fixture on 20. . . . From K4EHA: ET3AF missed out on much of the ARRL DX Test this year because of illness but now puts finishing touches on his new 8138 rig. "It is really astonishing what DX one can get from here. I have worked 58 countries in four months of effective operating and I hope I manage full DXCC before leaving Addis Ababa." Gunnar mentioned three uncles and an aunt living in the U. S. A.; he himself spent time on the East Coast in 1945-'46. ET3AF has worked at radio for twenty years with the Swedish Navy, United Nations (Palestine), and now Scandinavian Airlines. He'll go back to Sweden this fall on leave to visit his family and perform Navy service, and adds, "Ethiopia is a beautiful country but the lack of roads in such a high and wild terrain makes one wish for a helicopter!" . . . Of DUF awards significance, W6YY reports activity by FB8BX/NB on Noxy-Be Isle in the Mozambique Channel. . . . Former KT1s now sign CN2 calls, an official shuffle confirmed by K2QXG.

Oceania — Ws 1B1H 3AEV 8NGO #QGI and VK6MK pool Netherlands New Guinea info, and Biak is a-busting. JZ0PA returned to the air after bouts with malaria, tropical ulcers, broken ribs and equipment fire damage. Tony, a surveyor, runs 150 watts phone near 14,200 kc. around 1200-1300 GMT. He must rewind burned-out transformers and r.f. chokes by hand, and contemplates erecting a Vee. JZ0PC, formerly EI2E and VE2AQJ, is closing station. . . . W8NGO reports VK9YT active from Manus after a move from New Ireland. Rev. Carl likes 20 phone work with the States near 14,125 kc. and 1300 GMT, running 85 watts to a dipole. A beam is in the works. . . . Ex-PRKDA indicates that anyone who undertakes "unofficial" hamming in Indonesia these days is spunky, indeed. . . . Struck with our February squib on the weird appearance of great-circle maps centering on V82, KH6IJ writes W6YY to state that Hawaii-centered g.c. maps feature a South Africa border at all bearings. "Practically, however, signals always follow the night path — 240° or 240° and 110° evenings." . . . VR2DB, a recent Fiji arrival using 14,125 kc. phone around 1300 GMT, is ex-ZK1BH-ZL2AVW-ZL4LB. W8NGO describes Nat's layout as 60 watts to the inevitable 807 screen-modulated, a homespun 12-tube superhet and long-wire. . . . W6ZZ, gunning for the NZART (New Zealand) WANZ award, has worked 35 of the required 150 society branches, with 31 confirmed. A stiff one! . . . Navyman W6CCO visited pleasantly with ZL2a ANF ANR and DX while cruising Pacific waters. In ZL2ANR's shack Butch was confronted by a life-size mural of Jeeves. . . . "Most of the gang here on Guam are die-hards for phone. Stations active include KG6s AFZ AGO AGS AGW FAE NAC W9NTJ/KG6, K4EMH/KG6, K0ABM/KG6 and KH6AIK/KG6 (myself)." KH6AIK/KG6 who, with W9NTJ/KG6, turns out most contemporary Guam c.w. contacts, will be back in the U. S. next month. . . . W6DZZ, in correspondence with W1WPO, reports hooking transpac raft *Tahiti-Nut*, F08AF/MM, whose one-watt 14-Mc. signal hits 87 in California. The craft and its crew of five were some 300 miles south of Easter Island. . . . Oceanic items courtesy the MARTS *Malayan Radio Amateur*. F08s AC and AD use the same 20-meter phone rig and bang through well around 0900 GMT. . . . VS4JT expects to keep Sarawak workable for two more years with a 120-watt 14-Mc. phone at Miri; neighbor VS4NW moved to Sibit but has no gear along; and VS4BO prefers 15-meter week-end work.

Europe — Hot-dog, soft-drink and radio-parts concessionaires in the Aland Islands must be making a killing. OH0 DXpeditions continue unabated and here's one announced in advance by OH20J: "My XYL, OH2QJ, and I will go to the Alands July 20th to operate on 20 (a.s.b.). The call used will probably be OH20J/OH0 and the band will be mainly 20 meters; also 15 if I can get the rig operating well on 21 Mc. . . . The gear will be the W2EWL unit [see "Cheap and Easy S.S.B." March 1956 QST], BC-453 with product detector and converters, and more than likely a ground-plane antenna." If all goes well OH20J will be available in the islands well into August. At the home station Sam has been side-banding since November of '55 and needs only Ariz., Ky., N. Mex. and Vt. to confirm a neat two-way a.s.b. WAS. . . . W1BDI reports another a.s.b. venture, this one by HB9FU to Liechtenstein. A station signing HB1HB/FL showed up around 14,300 kc. at the appointed time in early April and the Ducks were really squawkin'. . . . Lark tells W2HJM he'll be home to visit Uncle Sam within a twelve-month. . . . WASwise, W2HJM hears that SM2BCS requires only N. Dak. and Miss.; W1JRC learns that G2CRS haunts the low edge of the W/K 28-Mc. phone band yearning for Nev.; and OM 11FT has but four states to go. . . . SRAL secretary OH2YV informs us that OH2NB continues as the only amateur resident in the Aland Islands. OH2NA, though licensed for Alands work, lives in Turku. "No doubt there will be quite a lot of OH stations active in OH0 this year, especially in the summer, and they will use their own calls adding /9 or /OH0." John adds that Finnish amateurs are not permitted to use 160 meters. . . . CT2BO, long our main source of Azores QSOs, especially on c.w., is particu-

(Continued on page 186)



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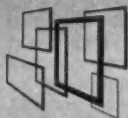
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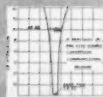
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Ham Radio Banned

Some Interesting Quotes on a Subject of Interest to DXers

BY D. REGINALD TIBBETTS,* W6ITH

FOR SOME TIME now there has existed a prohibition, issued by the FCC, against working certain prefixes.¹ It has caused a bit of unhappiness amongst some of the brethren, yet the FCC had no choice but to issue the prohibition, and QST had no choice but to publicize it. You see, Article 42 of the international treaty dealing with telecommunications reads as follows:

"Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such radiocommunications."

And the countries of Iran, Vietnam, Korea, Indonesia and Cambodia have all formally notified the ITU headquarters at Geneva that they do not permit amateur radio communications between their countries and the rest of the world.

Being rather interested in the subject, and through my professional connections which made it possible for me to get some direct quotations from responsible government officials in these various countries, I determined to make a personal investigation. Why, I asked myself, had these countries forbidden their amateurs to communicate with amateurs in other countries?

Well, as I dug into it, I soon found out that the whole story hadn't been told yet. The fact of the matter was that most of these countries didn't permit amateur radio at all. In other words, it wasn't a case of their not permitting their amateurs to work other countries — it was a case of not permitting *any* amateur radio.

I was able to talk personally with the representative of one government, and by telephone or teletype with three others, and from the representative of a fifth government I was able to get a statement through one of my on-the-spot business associates. You'll be interested in what I found out, and the quotes below will fill out the picture and make further comment unnecessary.

All of these five countries which prohibit amateur radio have one thing in common. All are "infant" countries — having existed in their present forms for only short periods. All have elements within and outside the country. In order to keep these subversive elements under control, they found it necessary to seal off all but limited means of easily-censored communications. To eliminate amateur transmitters is to remove a communication link between those who could misuse radio to disturb the uneasy peace.

Minister of Communications Kim in Seoul told me: "Amateur radio activity in Korea is not permitted because the government does not

have adequate radio control facilities. Our radio control officers must watch all radio activities because of possible communications with the communists who are so close in North Korea. Permission for amateur radio means extra burdens to monitor frequencies." Kim added, "Nevertheless, requests for amateur permission are mounting and some stations are feared operating without permission." He expressed the opinion that it may be several years before the government of Korea can permit amateur radio.

It appears that numerous political elements in Indonesia are not satisfied with the present government. Numerous local regions have demanded local autonomy, some by frequent armed resistance. To deny these elements opportunities to consolidate through uncontrolled communications, and to communicate with external supply sources for arms and ammunition, amateur radio transmissions are not permitted. Suwito Kusumowisagdo, spokesman for the Director of the Ministry of Communications, Posts, Telegraphs and Telephones told me: "For the time being the government of the Republic of Indonesia bans amateur radio transmissions because of insecurity in Indonesia. However," he quickly added, "there is no law which forbids the issuance of licenses for amateur operators or stations."

Hohng Tieng, Minister of Communications in Saigon, Vietnam, in a most interesting interview said — "The sole reason for prohibiting amateur radio is 'national security.' The northern part of our country is under control of the communists, who by the terms of the Geneva Conference held in July, 1954, hold that portion until elections, scheduled for July, 1956, and not yet held, determine the future of Vietnam." He added, "Remnants of other rebel sects are known to possess radio transmitters." There are numerous undenied reports, some difficult to confirm, that anti-government radios are being operated in South Vietnam as well as jamming equipment being used against the government radios.

I was told that the government of Vietnam fears that radio transmitters could be used to communicate with the north and — probably more realistic — to confuse listeners in the south with distorted or false news. So taking no chances, the ban is on against amateurs in Vietnam.

It is difficult for me to predict when amateur operation might be permitted in Vietnam in the future. The government is still carrying on military and propaganda activities against remnant insurgents. So long as the need for such activities exists, it is unlikely that the ban will be relaxed.

In Phnompenh, Capital of the Kingdom of Cambodia, the tiny Indochinese country carved

* P. O. Box 1000, Moraga, Calif.

¹ The present list of banned countries and prefixes, according to an FCC Notice dated Dec. 17, 1956, includes Cambodia (F1S, XU), Indonesia (PK, YB-YH), Iran (EP-EQ), Korea (HL-HM), and Vietnam (F1S, XV, 3W).

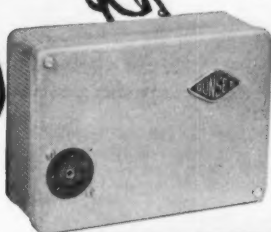
(Continued on page 162)

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I.A.R.U. News



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For delivery of your QSLs to foreign amateurs, simply mail cards direct to the bureau of the proper country, as listed below. (**Bold-face** type indicates a recent change from previous listings.) *W, K, and VE amateurs may send foreign cards to A.R.R.L. Headquarters for which no bureau is listed.*

For service on incoming foreign cards, see list of domestic bureaus in most QSTs under "A.R.R.L. QSL Bureau."

Algeria: G. Deville, F9RW, Box 21, Maison-Carree, Alger
Angola: L.A.R.A., P.O. Box 484, Luanda
Argentina: R.C.A., **Carlos Calvo 1424, Buenos Aires**
Australia: W.I.A., Box 2611 W, G.P.O., Melbourne
Austria: Oe. V.S.V., P.O. Box 15, Klosterneuburg, 2
Azores: Via Portugal
Bahamas: C. N. Albury, Telecommunications Dept., Nassau
Barbados:

Belgian Congo: **P.O. Box 2696, Elisabethville**
Belgium: U.B.A., Postbox 634, Brussels
Bermuda: VP9D, James A. Mann, **Floral Lane, St. Georges**
Bolivia: R.C.B., Casilla, 2111, La Paz
Brazil: L.A.B.R.E., Caixa Postal 2353, Rio de Janeiro
British Guiana: D. E. Yong, VP3YG, Box 325, Georgetown
British Honduras: D. Hunter, Box 178, Belize
Bulgaria: Box 830, Sofia

Burma: XZ2OM, P.O. Box 1490, Rangoon
Canton Island: H. B. Johnson, KB6BA, U.S.P.O. 06-50000, Canton Island, South Pacific

Ceylon: P.O. Box 907, Colombo
Chile: Radio Club de Chile, Box 761, Santiago
China: M. T. Young, P.O. Box 16, Taichung, Formosa
Colombia: L.C.R.A., P.O. Box 584, Bogotá

Cook Islands: Ray Holloway, P.O. Box 65, Rarotonga
Costa Rica: Radio Club de Costa Rica, **Box 2412, San Jose**
Cuba: Radio Club de Cuba, QSL Bureau, **Ayestaran 629, Altos Cerro, Habana**

Cyprus: Mrs. E. Barrett, P.O. Box 219, Limassol
Czechoslovakia: C.A.V., P.O. Box 69, Prague I
Denmark: P. Heinemann, OZ4H, Vanlose Alle 100, Copenhagen

Dominica: VP2DA, Box 64 Roseau, Dominica, Windward Islands
Dominican Republic: Calle Duarte #76, C. Trujillo
East Africa: (VQ1, VQ3, VQ4, VQ5): P.O. Box 1313, Nairobi, Kenya Colony

Ecuador: Guayaquil Radio Club, Casilla 784, Guayaquil
Eire: J. Corcoran, EI5M, 194 Collins Ave., Whitehall Co. Dublin
Fiji: S. H. Mayne, VR2AS, Victoria Parade, Suva

Finland: SRAL, Box 306, Helsinki
France: R.E.F., BP 26, Versailles (S & O);
France (F7 calls only):

A/IC Thomas J. Shytle, F7EZ, Hq., US Eucom Mars Radio, APO 128, % P.M., New York, New York
Germany (DL2 calls only): Via Great Britain
Germany (DL4 calls only): DL4 QSL Bureau, % **Mars Radio DL4HAB, 7425th Air Base Group, APO 109, N. Y., N. Y.**

Germany (DL5 calls only): Via France
Germany (other than above): D.A.R.C., Box 99, Munich 27
Gibraltar: E. D. Wills, ZB2L, 9 Naval Hospital Road
Gold Coast: E. L. Lloyd, ZD4BL, P.O. Box 565, Kumasi, Ashanti

Great Britain (and British Empire): A. Milne, 29 Keehill Gardens, Hayes, Bromley, Kent
Greece: George Zarifis, 10 Saint Fanouris St., Panagрати, Athens

Greenland: APO 858, % Postmaster, New York, N. Y.
Grenada: VP2GE, St. Georges
Guam: G.R.A.L., Box 145, Agaña, Guam, Marianas Islands
Guantanamo Bay: Guantanamo Amateur Radio Club, Box 55, NAS, Navy 115, F.P.O., New York, N. Y.

Guatemala: Manuel Gomez de Leon, P.O. Box 12, Guatemala City

Haiti: Radio Club d'Haiti, Box 943, Port-au-Prince
Hong Kong: Hong Kong Amateur Radio Transmitting Society, P.O. Box 541, Hong Kong

Hungary: H.S.R.L., Postbox 185, Budapest 4
Iceland: Islenkir Radio Amatörar, Box 1058, Reykjavik
India: Box 1, Munnar, Travancore, S. India
Indonesia: P.A.R.I., P.O. Box 222, Surabaya, Java

Israel: I.A.R.C., P.O. Box 4099, Tel-Aviv
Italy: A.R.I., Via San Tomaso 3, Milano
Jamaica: **QSL Bureau, 5 Braemar Ave., Half-Way-Tree P.O.**

Japan (JA): J.A.R.L., Box 377, Tokyo
Japan (KA): F.E.A.R.L., P.O. Box 111, APO 500, % Postmaster, San Francisco, Calif.
Kuwait: **William N. Burgess, MP4KAC, % Kuwait Oil Co., Kuwait, Persian Gulf**

Lebanon: R.A.L. B.P. 3245, Beyrouth
Libya: See Tripolitania
Luxembourg: G. Berger, 40 Rue Trevis, Luxembourg
Macao: Via Hong Kong

Madeira Island: P.O. Box 257, Funchal
Malaya: QSL Manager, **Box 777, Kuala Lumpur**
Malta: R. F. Gales, ZB1E, "Casa Gales", Railway Road, Birkirkara

Mauritius: V. de Robillard, Box 155, Port Louis
Mexico: L.M.R.E., Liverpool 195-A, Mexico, D.F.
Montserrat: VP2MY, Plymouth

Morocco: A.A.E.M., P.O. Box 2060, Casablanca
Morocco (Tangier International Zone only): Box 150, Tangier

Mozambique: Liga dos Radio-Emissores, P.O. Box 812, Lourenco Marques
Netherlands: V.E.R.O.N., Postbox 400, Rotterdam
Netherlands Antilles (Aruba): Postbox 392, San Nicolas, Aruba

Netherlands Antilles (Curacao): Postbox 383, Willemstad, Curacao
Netherlands East Indies: Hr. C. Lose, PK1LZ, Burg. Kuhrweg, 47 Bandoeng, Java

New Zealand: N.Z.A.R.T., P.O. Box 489, Wellington C1
Nicaragua: YNIRA, Apartado Postal 555, Managua
Northern Rhodesia: N.R.A.R.S., P.O. Box 332, Kitwe

Norway: N.R.R.L., P.O. Box 898, Oslo
Okinawa: O.A.R.C., P.O. Box 739, APO 331, % Postmaster San Francisco, Calif.

Pakistan: Box 4074, Karachi
Panama, Republic of: L.P.R.A., P.O. Box 1622, Panama
Paraguay: R.C.P., P.O. Box 512, Asuncion
Papua: P.O. Box 107, Port Moresby

Peru: R.C.P., Box 538, Lima
Philippine Islands: Elpidio G. DeCastro, Philippine Amateur Radio Assn., 2046 Taft Ave., Pasay City
Poland: Polish QSL Bureau, P.O. Box 320, Warsaw 2

Portugal: Rua de D. Pedro V., 7-4, Lisbon
Roumania: A.R.E.R., P.O. Box 95, Bucharest
Saar: P.O. Box 310, Saarbrücken

Salvador: YS1O, Apartado 329, San Salvador
Singapore: P.O. Box 2394, Singapore, Malaya
South Africa: S.A.R.L., P.O. Box 3037, Capetown

Southern Rhodesia: R.S.S.R., Box 2377, Salisbury
Spain: U.R.E., P.O. Box 220, Madrid
St. Vincent: VP2SA, Kingstown

Sweden: S.S.A., Stockholm 4
Switzerland: U.S.K.A., Knutwil
Syria: P.O. Box 35, Damascus

Trieste: P.O. Box 301, Trieste, F.T.T.
Trinidad: John A. Hoford, VP4TT, Box 554, Port-of-Spain
Tripolitania: 5A2TZ, Box 372, Tripoli

Uganda: P.O. Box 1803, Kampala
Uruguay: R.C.U., P.O. Box 37, Montevideo
U.S.S.R.: Central Radio Club, Postbox N-88, Moscow

Venezuela: R.C.V., P.O. Box 2285, Caracas
Virgin Islands: Richard Spenceley, Box 403, St. Thomas
Yugoslavia: S.R.J., Postbox 48, Belgrade

MALLORY HAM BULLETIN

Why Mallory FP Capacitors ...with *etched cathodes*... won't develop "Middle Age Hum"

Ever notice how some electrolytic capacitors allow hum to develop after a few weeks of service? Even though they test out OK when installed, they let filter hum grow to an objectionable level in a relatively short time.

This is "middle age hum." It's caused not by capacitor leakage current, but by loss of capacitance. It's a common ailment of capacitors with plain foil cathodes. And it won't happen with Mallory FP capacitors, because they are made with *etched cathode* construction.

Here's the explanation. Maybe it's something you never realized goes on inside a capacitor. Actually there are *two* capacitors in series inside every electrolytic; one at the anode, and one at the cathode. The anode capacitor is the one that is formed electrically during manufacture. The cathode "parasitic" capacitor is due to the naturally formed oxide coating on the cathode foil. In a *new* capacitor, this cathode film is so thin, and capacitance thus so high, that the net microfarad value you measure at the capacitor terminals is hardly affected.

In a circuit having heavy ripple currents, the cathode can be driven positive with respect to the electrolyte during reverse peaks of the cycle. This action causes the oxide film to increase in thickness . . . *reducing* cathodic capacitance. The net series value goes down. And when the cathode capacitance gets comparable in size to the anode, the loss in filtering ability can be serious enough to cause considerable hum.



A capacitor with a plain cathode has no built-in "safety factor" to protect against capacitance loss, because its available cathode area is limited.

An etched cathode—as you'll find in Mallory FP's—eliminates this source of trouble. Because etching produces so much greater capacitance per unit area, the cathode capacitance is extremely high when the component is new. And build-up of the film during service doesn't reduce capacitance to a magnitude that will cause appreciable change.

Etched cathode is standard at *no extra cost* in Mallory FP capacitors and in popular Mallory metal and cardboard tubulars. It's another of the premium features that you're always sure of getting from Mallory, to assure the best in performance in your amateur rig or in repair jobs that you do in your shop.

See your Mallory distributor soon. He has Mallory capacitors with *etched cathodes* in the ratings you need.

P. R. MALLORY & CO. Inc.

Distributor Division

P. O. Box 1558

INDIANAPOLIS 6

INDIANA

P. R. MALLORY & CO. Inc.
MALLORY

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. Its operation is made possible by volunteer managers in each W, K and VE call area. All you have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner.

W1, K1 — D. W. Waterman, W1IPQ, 99 Flat Rock Rd., Easton, Conn.

W2, K2 — E. F. Huberman, W2JIL, Box 746, GPO Brooklyn 1, New York.

W3, K3 — Jesse Bieberman, W3KT, P.O. Box 400, Bala-Cynwyd, Penna.

W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.

W5, K5 — Robert Stark, W5OLG, P.O. Box 261, Grapevine, Texas.

W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.

W7, K7 — Joseph P. Vogt, W7ASG, John Day, Oregon.

W8, K8 — Walter E. Musgrave, W8NGW, 1245 E. 187th St., Cleveland 10, Ohio.

W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.

W8, K8 — Alva A. Smith, W8DMA, 238 East Main St., Caledonia, Minn.

VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.

VE2 — Harry J. Mabson, VE2APH, 122 Regent Ave., Beaconsfield West, Que.

VE3 — Leslie A. Whetham, VE3QE, 32 Sylvia Crescent, Hamilton, Ont.

VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.

VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.

VE6 — W. R. Savage, VE6EO, 883 10th St. N., North Lethbridge, Alta.

VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.

VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.

VO — Ernest Ash, VO1A, P.O. Box 8, St. John's, Newfoundland.

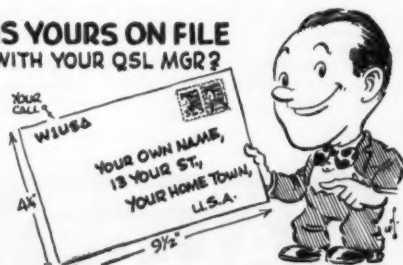
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.

KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.

KL7 — KL7CP, 310—10th Ave., Anchorage, Alaska.

KZ5 — Catherine Howe, KZ5KA, Box 407, Balboa, C. Z.

IS YOURS ON FILE WITH YOUR QSL MGR?



Strays

(See page 55)



Meet Charles W7VMO, Richard W7VMP, and Robert W7VMO, the Fenwick triplets, recently very active in contest, DX and v.h.f. work from Phoenix, Arizona. They are now attending Purdue University at Lafayette, Indiana.

Silent Keys

It is with deep regret that we record the passing of these amateurs:

W1UOS, John J. Bednarz, N. Grosvonordale, Conn.
W2CPQ, John C. Phipps, Sparta, N. J.
K2IYO, William J. Butler, Jr., Salem, N. J.
KN2TJH, Alan F. Jensen, Princeton, N. J.
W3AJX, Anthony J. Berger, Baltimore, Md.
W3KIL, Mike Barbat, Jr., Shanon, Pa.
W4LEP, Daniel L. Edwards, Tampa, Fla.
W5AYJ, Will G. Gammill, Fort Smith, Ark.
W5CVA, William E. Tomlin, Fort Worth, Texas
W6JTV, Paul A. Hodapp, Fullerton, Calif.
W6JYY, Kenneth V. Darbro, Los Angeles, Calif.
K6KTL, Fred W. Easton, Sacramento, Calif.
W6NBW, Earl W. Vance, Loomis, Calif.
W6NUY, Clarence E. Nalley, San Gabriel, Calif.
W6ON, Ora F. Martin, Baldwin Park, Calif.
W7PST, Rudolph R. Malo, Minden, Nev.
W8ULU, Richard H. Kincaid, Kincaid, W. Va.
8ZW, John C. Strobel, Wheeling, W. Va.
W9AZN, Albert D. Sanial, La Crosse, Wis.
W9IVP, Ronald S. Hart, Chicago, Ill.
W9LQB, William A. Morris, New Castle, Ind.
W9WZV, George R. Whittaker, Hanover, Ind.
KN8EMD, Clifford D. Tresidder, Owatonna, Minn.
W0GRD, Milford H. Monson, Lignite, N. Dak.
W0HGT, Earl J. Davis, Stratton, Colo.
W0WCC, William D. Kanning, Audubon, Iowa
GW3CR, W. T. Rees, Gilfach Goch, Wales
KH6CT, George W. Spare, Lanikai, Hawaii
VE3HK, Rev. F. J. Williams, Kingsville, Ontario

VY FB!



New

HAMMARLUND HQ-110

- DOUBLE CONVERSION!
- 6, 10, 15, 20, 40, 80 AND 160 METER BANDS!
- SEPARATE SSB LINEAR DETECTOR!
- Q-MULTIPLIER!
- DUAL DIALS!
- CRYSTAL CALIBRATOR!
- CRYSTAL CONTROL!
- SEPARATE STABILIZED BFO!
- DIAL SCALE RESET!

Hammarlund's done it again.
Here's a real sweetheart for the amateur...

The HQ-110 incorporates all the features you need at a price that's hard to believe. Only through Hammarlund's exclusive production techniques could so much receiver be offered at so low a price.

It's VY FB OM — so get all the details right now—you'll be amazed at what Hammarlund's done this time...

VY FB—
YOU BET! WRITE
FOR COMPLETE
BULLETIN...

\$229⁰⁰*

*Optional Telechron automatic clock-timer \$10.00 extra.



HAMMARLUND

HAMMARLUND MANUFACTURING COMPANY, INC. 450 W. 34th ST. N.Y.C. 1, N.Y.

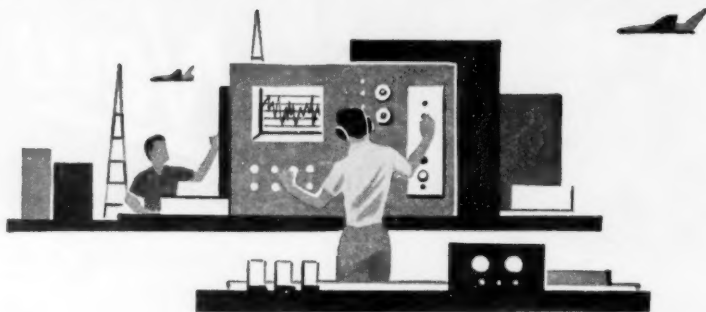
Export: Radio International, 12 E. 40th St. N.Y.C. 17, N.Y.

Canada: Victor Radio, Ltd., 21 Bond St. W. Toronto, Ont.

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for a far better future when

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An engineer who leans toward what he calls the "practical" side of his work . . . a man who likes to get out in the field and see exactly what an equipment can or can't do and why . . . a man who appreciates keeping in touch with the operating results of his engineering thinking . . . in short, an engineer who prefers to apply the developments of his profession.

If that's an accurate description of *your* electronic or mechanical engineering tastes, then you're one of the men for whom RCA is opening many engrossing new opportunities.

Be "practical" about location, too . . .

Your initial assignment may take you to RCA's engineering centers at Moorestown or Camden, N.J., or to one of several metropolitan centers on the east or west coast. In addition, many assignments involve periodic temporary duty in Hawaii, Japan, Alaska or the Mediterranean area.

Get the story direct from RCA engineering management. In the near future, RCA representatives will be in the areas listed below. Are you near one of them?

June 24, 25—Memphis
June 27—Winston-Salem
June 24, 25—Cleveland
June 26—Akron

June 27—Columbus
June 28, 29—Detroit
July 5, 6—Louisville
July 6, 7—Birmingham

July 9, 10—St. Louis
July 9, 10—Boston
July 13, 14—Utica
July 15, 16—Syracuse

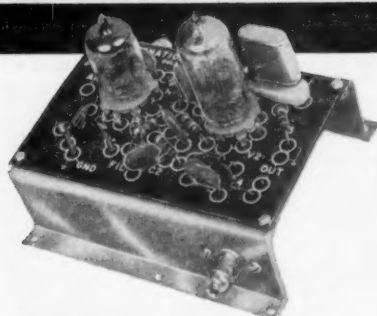
To arrange confidential interview when we are in one of the above cities—or in a mutually convenient area—send your resume today, to:

Mr. James Bell,
Employment Manager, Dept. Y-1F
RCA Service Company, Inc.
Cherry Hill, Camden 8, N.J.



RCA SERVICE COMPANY, INC.

PRINTED CIRCUIT 6 METER CONVERTER



Compact, Broad Band Crystal Controlled

● No alignment necessary . . . Simple to assemble . . . with snap-on connectors for power leads! Output IF frequency can be changed by merely changing the crystal (crystal range of 40 MC to 50 MC).

Specifications

Freq. Range	50-54 MC (51 MC design center)
Sensitivity	1 microvolt or better
Output IF*	(1) 600 KC to 1500 KC (2) 7 MC to 11 MC
Crystal Freq.	49.4 MC or 43 MC depending on IF desired (Oscillator range 40 MC to 50 MC).
Plate Power	150 volts to 250 volts DC @ 15 ma to 20 ma
Heater Power	6.3 volts @ 600 ma
Tubes	6AK5 RF Amplifier 6J6 Mixer Oscillator
Size	(overall) 4" x 3 1/2" x 3 1/2"
Weight	3 ounces

KIT (with crystal less tubes).....\$10.95

COMPLETE, wired and tested with tubes and crystal.....\$15.95

*Specify IF when ordering

HOW TO ORDER

For fastest possible service, crystals, oscillators and converters are sold direct. When cash accompanies order, International prepays postage. Otherwise, shipment made C.O.D.

ONE DAY Processing!

FA-9 CRYSTALS



For AMATEURS—
EXPERIMENTERS 1500 KC to 50 MC

Wire mounted, plated crystals for use by amateurs and experimenters where tolerances of .01% are permissible and wide range temperatures are not encountered.

CIRCUIT: Designed to operate into a load capacitance of 32 mmf on the fundamental between 1500 KC and 15 MC. Designed to operate at anti-resonance on 3rd overtone modes into grid circuit without additional capacitance load. 5th overtone crystals designed to operate at series resonance. (Write for recommended circuits)

Prices

Pin Diameter .093"
Pin Spacing .486

(FA-9 Fits Same Socket as FT-243)

FREQUENCY RANGE	TOLERANCE	PRICE
1500-1799 KC	.01%	\$ 4.50
1800-1999 KC	.01%	4.00
2000-9999 KC	.01%	3.00
10000-15000 KC	.01%	4.00
Overtone Crystals—3rd Overtone Operation		
15 MC-29.99 MC	.01%	\$ 3.00
30 MC-54 MC	.01%	4.00
Overtone Crystals—5th Overtone Operation		
55 MC-75	.01%	4.50
76 MC-90 MC	.01%	6.50

PRECISION CRYSTALS COMMERCIAL USE

F-6 SERIES
1500 KC—50 MC

NOTE: The FA units will not necessarily have the correct correlation for Commercial use.
For commercial applications, the F-6 type unit should be used. Write for details!

One Day Service! Specify exact frequency and crystal will be calibrated to .01% or better of this frequency, when operated in the specified operating circuit.

International Crystal Mfg. Co. Inc.

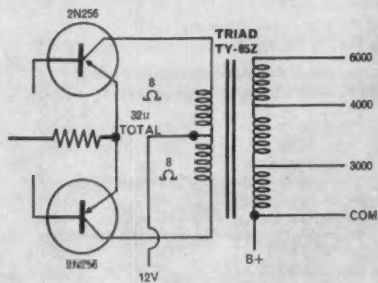
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OKLAHOMA CITY, OKLAHOMA

TRANSFORMER NEWS

FROM TRIAD



All-transistor modulator circuit for low-power mobile transmitters. Triad TY-65Z Transformer is used in conjunction with the new 10-watt transistor (CBS Hytron 2N256).

TRANSISTOR TRANSFORMER for the advanced amateur

Our experience in building miniature transformers for military use led to the development of this new transistor transformer for you. The Triad TY-65Z is designed especially for amateur use. See your distributor, or write to us.



PRIMARY IMPEDANCE	SECONDARY IMPEDANCE
32 CT. (575 Ma.)	6000 4000 3000

MAXIMUM LEVEL

10W
WEIGHT, OUNCES
20

DIMENSIONS, INCHES

H	W	D	MW
2-5/16	2-7/8	2	2-3/8

4055 REDWOOD AVENUE, VENICE, CALIFORNIA
812 E. STATE STREET, HUNTINGTON, INDIANA

A SUBSIDIARY OF LITTON INDUSTRIES

(Continued from page 96)

new Globe Chief. Members of the Cumberland Valley ARC advanced plans for the coming ARRL Field Day at the last meeting, coupled with the showing of several c.d. films. ZQU rebuilt his mobile rig. RH works DX again with a rebuilt beam. ESV wants to work DX on 20 meters. QCU is planning a test for the mobiles in CVARC to check "dead" spots in the county. The Butler County Amateur Radio Assn., Inc. (UDX) now meets the 1st and 3rd Sun. of each month at 7:30 p.m. in the Veterans Administration Deshon Hospital. Officers are CUM, pres.; BMK, vice-pres.; ZIJ, secy.-treas. LAT is trustee. Traffic: (Mar.) W3W1Q 1560, HZK 110, YA 62, GUY 50, KUN 39, UHN 94, KNQ 9, SIJ 4. (Feb.) W3YA 27.

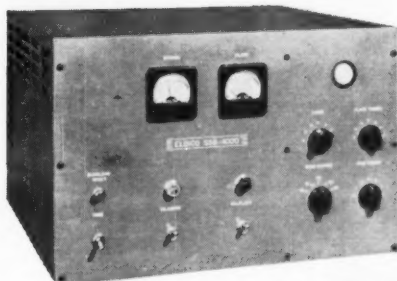
CENTRAL DIVISION

ILLINOIS—SCM, George T. Schreiber, W9YIX—Section Nets: ILN, 3515 kc. Mon. through Fri.; IEN 3940 kc. SEC: HOA, RM: STZ and MAK. Cook County EC: HPG. Grace, GME, has been appointed Assistant SCM in charge of women's affairs. Additional appointments to the staff of the National Convention, scheduled for Chicago for the Labor Day week end, by Gen. Mgr. QKE are BKJ and PBM. Wouff-Hong initiation: BUK, traffic: SPB, AREC and RACES; FDX and KFC, DX and W9 DXCC; SPT and GRW, RTTY; WOK, v.h.f.; and ILS, mobile. Add FBX and FBZ to the family teams in the section. A new ORS is JZK. LNQ is the new editor of *Ham-Gab*, the official voice of Hamfests, now observing the club's 25th anniversary. KQL, a former SCM, now is heard regularly from Springfield on ILN. Congrats to VVY, who has marriage plans. By the time you read this VSW should be close to getting out of the service. KLD now is signing (KLT). YH hopes to have the U. of I. station back on the air soon with a new receiver. The station's regular receiver was stolen from the club room. BQC, returned to 2 meters, reports the Rockford 6-Meter Emergency Net now has 15 stations on its roll. SES, OO, reports that three out of four stations to which he sent notices for chirpy signals cleaned up their notes. Congrats to the York High Radio Club and the Amateur Radio Club of Greenville College on their recent affiliation with ARRL. The Egyptian Radio Club station, AIU, now boasts a 100-ft. antenna pole with 2-, 6- and 10-meter antennas on top, and 80- and 40-meter doublets fanned out to other points. The SWANI held a series of interesting meetings and plans more in the future. New officers are OBY, K9ESQ, YUN, K9CCO and KN9DZF. Elections at the St. Clair Amateur Radio Club put the following in office: HQR, JMY, K9BIY, PAM, RSZ and BFS. The club is making convention plans. Montgomery County AREC members, their families and guests enjoyed a "ham scramble" on Mar. 24. ILN held 24 sessions in March and handled 236 messages. The North-Central Phone Net handled 210 in the same period. There still is no report from IEN, nor any news from that group for that matter. The North-Central plans to hold its hamfest Apr. 4 at St. John Sanatorium in Springfield. New ILN members are JXK and K9KNC, of Keokuk and East St. Louis, respectively. ZWS has moved to Arizona. A new Conditional Class licensee in the section is K9DAG. The Chicago Area Radio Club Council's recent meeting was attended by TSN, president of ARRL, and GPI, Central Division Director. The Midwest V.H.F. Club now has more than 200 members, running a close race for the biggest Illinois Club with the Hamfests, which took in 16 new members to boost its total to 275. Novice graduates are DKM and BJJ. Traffic: W9DO 644, MAK 348, YYG 344, YRH 154, PCQ 102, IDA 96, K9GJR 88, W9FAW 74, OYL 66, JZK 62, CTZ 57, VDH 50, YFO 48, YIX 41, STZ 34, K9AXL 29, W9YGG 22, K9CNC 16, W9EDH 14, KQL 11, DJG 8, K9BFI 7, AMD 6, W9UDA 4. (Feb.) K9BXL 8, W9YGG 7.

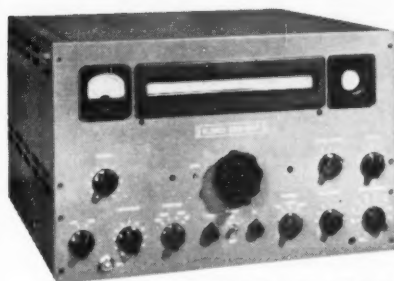
INDIANA—SCM, Seth Lew Baker, W9NTA—Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ, RM: DGA, TQC and TT. PAMs: CMT, KOY, SWD and UXK. More stations are needed in the c.w. net, QIN, which meets daily at 1900 EST on 3656 kc. The NCS will come back to you at your speed so don't let that stop you. FIJ joined MARS. The TARS held an auction with 55 attending. The Bloomington ARC also had one with good attendance. K9AZU has a new DX-100 and 10-meter beam. IMI is mobile on 10 meters. AYP is moving to the West Coast. JVF has a Globe King. K9CQO is Tech. Class and operates on 6 meters. The Central Indiana Mobile RC assisted in the Heart Fund Drive in Indianapolis. Those taking part were MHP, BAQ, HPV, JND, SVC, UQW, NFL, IYI, FZW, YKI, RYQ, JIJ, K9CUB and CRF. POF and JBQ have DX-100s. NTE has a phone patch working. New calls: KN9s HKI, HCE, HCG and HCK. K9CBL is Cond. Class. K9BEY is on a.s.b. FYM is back on with a pair

(Continued on page 110)

Engineered **RIGHT** for all three . . . **SSB, AM, CW**, . . . by **ELDICO**



ELDICO SSB-1000



ELDICO SSB-100F

ELDICO SSB-100F

Type of Emission: C.W. — A.M. — SSB

Power Ratings: DC average input SSB-100 watts; A.M. input (two tone test)—60 watts. Peak envelope power input SSB-144 watts. Peak envelope power output SSB-100 watts.

Keying: Grid block, full break-in.

Harmonics and Spurious Responses: Spurious mixer products—50 db or more down. Third order distortion products—35 db or more down. TV interference suppression—40 db or more second harmonic, 60 db or more higher harmonics.

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Frequency Stability: Control Oscillator—(800 to 1300 kc) \pm 100 cycles after two minute warm up period. Output frequency—within 300 cycles after five minutes warm up period. Dial accuracy \pm 2 kc after calibration.

Tube Lineup: 22 tubes, including two rectifiers, two voltage regulators, one oscilloscope and one 5894 power amplifier.

There's a lot of good commercial equipment on the market today. And some home-brew gear rivals the best of the factory built rigs. But if you stop and take a critical look at virtually all of these handsome packages you find they are the work of "specialists." Manufacturer "A," convinced that SSB is the panacea for ham work has virtually forgotten that a lot of us still like to pound brass or work AM. W2XXX, who never heard that you can modulate a rig, has a gorgeous c.w. station that can't be employed for anything else. And so it goes, making the selection of a well-rounded design more difficult than might appear at first.

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ELDICO SSB-1000

Low Drive Requirement: 3 watts P.E.P. will drive to full kilowatt. **Pi-network Output:** Single knob bandswitch. High-efficiency silver-plated Pi-network output circuit. Matches wide range of antenna impedances.

High Harmonic Attenuation: High-Q plate and grid circuits and Pi-network output circuit provide maximum harmonic-attenuation.

Power Rating: DC Input C.W. 1000 watts, A.M. 700 watts

Peak Envelope Power:

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Output SSB-625 watts

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of 828s running 300 watts and a four-element beam on 10 meters. KLR put up a 60-ft. windmill tower for the 2-meter beam and is experimenting with a broadside beam. DPT reports 52 countries worked since Christmas. DFW made WAC Mar. 30. New appointment: SYM as OPS. K9GGC is active on 420 Mc. with a group of W4s. UNT is planning 420-Mc. MM operation on the river and is on 6 meters now. VZF has a new Tri-X tower and WRL beam. K9CFG reports 16 stations are reporting into the North Central Indiana 6-Meter Net, which meets on 30.5 Mc. Mon. and Fri. at 2030 CST. TT reports RFN traffic as 132. TQC gives QIN as 506. SWD reports IFN evening net as 236 and morning as 288, total 524. EHZ gives CAEN traffic as 433. Those making BPL were JOZ, EHZ, EQO, TT, JYO, NZZ, HXR and DGA. I hope all clubs and stations will participate on Field Day. Let's show the rest of the country that Hoosiers are the finest operators. The V.H.F. Picnic will be held July 28 at Turkey Run State Park. Date of the Evansville Hamfest is Aug. 25. Traffic: (Mar.) W9JOZ 953, EHZ 557, EQO 544, TT 520, JYO 510, K9BBO 399, W9NZZ 380, UNK 265, ZYK 234, SVL 227, HXR 225, TQC 163, BKJ 154, DGA 147, SWD 113, EJW 95, LDP 74, NTA 72, RTH 58, AB 52, UQP 49, SVZ 48, WUH 47, KTX 45, WBA 44, HRW 43, CYZ 42, VQP 37, VNV 34, K9GQB 30, AUE 29, W9WTV 29, DOK 26, NTR 26, CMT 25, PQZ 24, QYQ 24, HMW 21, WAU 17, HUQ 13, NH 13, URQ 13, DZC 12, YVX 12, CDW 11, EJC 11, ENU 11, ZSW 11, K9CFG 8, DWK 8, W9HDP 7, STC 6, EHY 5, VVS 5, CTF 3, EGQ 2, PPS 2, FYM 1, QR 1. (Feb.) W9KTX 119, CTF 4.

WISCONSIN—SCM, Reno W. Goetsch, W9RQM—SEC: EIZ. PAMs: NRP and AJU. RMs: KQB and KJJ. Nets: WIN, 3535 kc., 7:15 p.m. daily; BEN, 3950 kc., 6 p.m. daily. Wisconsin mobile and c.d. frequency: 29,620 kc. My sincere thanks and appreciation for a job well done go to OVO, who relinquishes his duties as SEC after completing his 3th term of office with a tremendous record of accomplishment in RACES and AREC. His successor, EIZ, takes over with a good background in the field as EC for Langlade County. TCC work helps the traffic count, comments CXY as he rolls up another BPL. KJJ picked up a few new countries in the DX Test. AKY received a QSL from UAL for a 28-Mc. phone QSO. FZC is toying with the idea of a.s.b. SQM is putting up a 28-Mc. beam. RQK reports a total of 4000 QSOs in 5 years of operation. A new club at the U. of W. is active with RQN, pres.; SDC, vice-pres.; ZQA secy.-treas.; VOO, trustee. After issuing several hundred Novice harmonic OO cards, GFL says: "Some days it sounds as though we have another Novice band between 7400 and 7500 kc.!" GAB has been keeping a nightly sked on 432 Mc. with DRN over a 70-mile path with 100 per cent copy every night. The DX status of RKP is 180 worked and 165 confirmed. RYV, BZU, RKT, HPC, DKH and GXD are Mancorad boys active on 144 Mc. QNO is DXing on 21 Mc. with a KWS-1 and a two-element beam. K9ERN, DGE and DUX are new General Class licensees. K9CAQ and W9NFX are building 2-meter rigs. Operations mgr. GXD reports new Mancorad Club officers are K9CAQ pres., K9DIN, vice-pres.; W9VAU, secy.-treas.; GXD and ZKB, directors, and RKT, EC. KXK put up a 60-ft. pole for the new antennas. WIN News, an FB bulletin by KQB, reflects the high level of activity on the c.w. net during the past year and a half. Net certificates (BEN) were issued to K9AEQ, BBT, BBU, CET, CKW, W9HSQ and QJW. CQR dropped the "N" from his call. KN9DCO has 36 states worked. K9DGM, HXX and DGL are new in the Janesville Area. Traffic: W9CXY 1042, KQB 124, KJJ 122, K9AEQ 108, W9AKY 36, FZC 24, SAA 18, SQM 17, OVO 13, EIZ 9, RQM 9, RQK 8, YZA 6, GIL 5, KWJ 5, SZR 2.

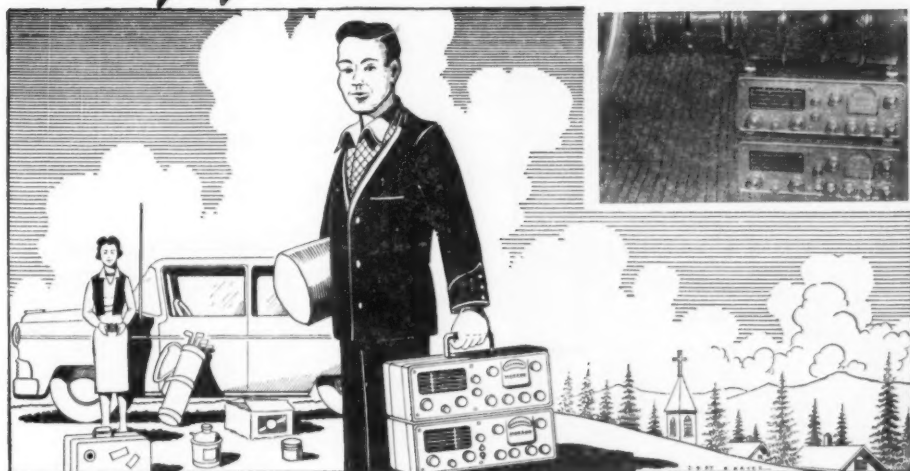
DAKOTA DIVISION

NORTH DAKOTA—SCM, Elmer J. Gabel, W0KTX—Six hams in and around Napoleon, namely IAP, JEP, KLP, UBG, WIQ and K0EFH, have come up with a new idea in hamfests. They will sponsor the North Dakota Hamhoree on July 14 at Beaver Lake State Park near Napoleon. There will be no registration fees, everything will be free. For further information and instructions on how to reach the park contact KLP, Napoleon. The North Dakota C.W. Net held 13 sessions and handled 93 messages. Traffic: K0CNC 327, W0FVG 152, K0ADI 42, APX 19, W0IHM 14, HVA 13, YCL 12, K0ATK 6, W0MQA 6, PHC 6, CAQ 2.

SOUTH DAKOTA—SCM, Les Price, W0FLP—Asst. SCM: Gerald F. Lee, 8YKY. SCM assistants: HOH, FKE, APL, GOH, NEO, TI, MZJ and GDE. SECs: YOB and GDE. PAM: ULV. RM: SMV. The S.D. C.W. Net, reports QTC 29; the S.D. WX Net, QTC 398; the S.D. 40-Meter Noon Phone Net, QTC 63; the S.D. 160-Meter Evening Phone Net, reports QNI 193 for March and 200 for Feb. The net closed Apr. 1 until the fall. The 75 meter S.D. Emergency Evening Phone Net reports QTC 70. RSP was heard in New Jersey three

(Continued on page 112)

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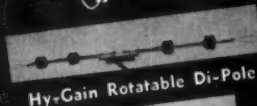
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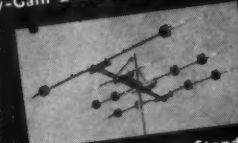


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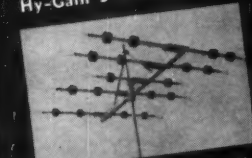
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times during March. A new Novice is Richard Meador, KN6IRN, of Leat. He and Allen Larson will be ready for the General Class exam in May and Jimmie Myers is about ready for the Novice exam. DVB conducts classes for these boys Sat. mornings and Mon. nights. The Signal Hill Amateur Radio Club held its Feb. 4th meeting and Apr. 1st meeting at the home of George and Dorothea Adams. Plans are being started for Field Day. The Mitchell ARC, which meets the 1st and 3rd Thurs., elected GWW, pres.; GWS, vice-pres.; WCN, secy.; GVL, treas.; and GCP, act. mgr. New officers of the Redfield ARC are KRASQ, pres.; SEQ, vice-pres.; BNA, secy.-treas. The club's main yearly activity is Field Day. NWK was home in Deadwood for a few days before returning to the Navy in California. KN8DHI is very busy in Fr. Morocco but finds time to send a letter to his mother, DVB, about once a week. CSB and family are now living in Vermillion. Four of the 5 engineers on the KDLO-TV staff at Garden City are now licensed hams: K0CRY, GFS, K0E1 and K0AZD. IEI is operated largely s.s.b., a 10B with an 813 running about 600 watts, and a 4-1000A rig being built. YVF has received his WAS and reports that his wife Lois, KN8DHA, passed the General Class exam recently and at the same time his brother Burton, KN8JCD, took the Novice Class exam. RRN had his receiver re-aligned by the factory and has been heard after DX since. In the last 3½ years, Tony has talked about ham radio 17 times to various and sundry organizations and meetings. GWS writes that he is moving to Spokane, Wash., to study for the ministry in the Assembly of God Church. He expects to have about 20 watts on 80-, 40- and 20-meter c.w., looking for South Dakota, especially on 3645 kc. and other net frequencies with a 7 call. Bill's address: 1828 W. Bridge. GDE had a card from RMK and UAJ stating that Larry would be temporarily stationed in Chicago by Western Electric and by May or June will be permanently stationed at Rapid City. LTS has moved to Chamberlain from Bonesteel. A new licensee at Marvin is Ark Ericsson, KN8JCC, the Baptist Minister there. Newly licensed at Freeman College is Leland Voth, KN8IYJ, using an ARC-2 tank transmitter. K9HHM, who joined the 75-meter net and did a fine job with 15 watts output, is doing even better now with his 1625s up to about 25 watts output when under modulation. Another new licensee at Lennox is KN8HUM. A new net member is K8AIE, Edgemont. Also new to me are K8BMQ and K8BMP, of Millboro. Dick has participated in the Nebraska Slow-Speed C.W. Net and checked into the S.D. C.W. Net for the first time Mar. 25th. DDT, Waterbury, Nebr. is now using a Viking Ranger on 75, 80, 40, 20 and 15 meters, phone and c.w., using doublets on each band with results that compare favorably with what he used with the former Viking II. Coincidence: The Wheat Belt Net of the Wheat Belt ARC down in the corner where Nebraska, Kansas and Colorado join, which meets at 1230 p.m. CST. Sat. found out that 75 meters was impossible and decided to move up to 40 meters, choosing 7225 kc. without knowing that the S.D. 40-Meter Net already was there. The first time the fellows showed up was Mar. 16 during traffic on the S.D. Net. After a few minutes discussion between EXX, mgr. of the S.D. Net, and QHE, NCS on the WB Net, the latter decided to wait while S.D. finished up then carry on that day and decide upon a new frequency for the future. RMK and UAJ requested that a place be kept available for them on the S.D. Nets when they get to Rapid City this summer. Larry checked into net, W8RMK/M9, from Waukegan, Ill. Mar. 23. His new address is 516 Prospect Rd., Round Lake Park, Ill. Approximately 61 RACES licenses have been received, according to announcement made Mar. 4th. If I've not erred, they are as follows: ADJ, APL, ARF, AQS, BAZ, BMM, BNA, BQS, BYD, CAS, CJS, CTZ, DEV, DKJ, DNV, DPD, DQK, DVB, DYN, ELV, ELP, EUB, FEF, GCH, HBZ, HUH, IQN, JLL, JYN, JLI, JLS, LBO, LXD, MMQ, NEO, NXX, NI, DOZ, ORE, QGZ, RRN RTD, SCT, SDK, SIR, SMV, SRX, TXX, UDI, VME, VMM, VQC, WUU, ZVV, ZWL, UVL, FLP, OXC, YOB, FKE, GDE. Traffic: W8ZWL 617, SCT 318, ARF 103, DVB 88, NEO 57, FLP 31, CTZ 29, OHI 20, YKY 20, ARE 13, GDE 13, BLZ 12, SMV 12, EXX 10, DKJ 9, NXX 9, BQS 8, QDV 8, BMQ 7, DIY 7, BNZ 6, RSP 6, BQR 4, O0Z 3.

MINNESOTA—SCM, Robert M. Nelson, W8KLG—Asst. SCM: Robert Schoening, #TRX SEC: GTX. RMs: DQL and RLQ. PAMs: JIE and LUX. The Minnesota Phone Net's special emergency session ran continuously for 43 hours and 35 minutes from 1800 Mar. 14 until 1335 Mar. 16. The session was called because several communities in Southwestern Minnesota were without commercial communications and the roads were blocked because of the sleet, ice and snow storm. A total of 383 formal messages was handled, plus approximately 255 messages not in standard form. Nearly all

(Continued on page 114)



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COMPACT: under dash or trunk mounting, case 5½" x 11" x 13".

LOW COST MAINTENANCE: the CONTROLLER has earned an excellent reputation for trouble-free operation. High quality standard manufacturers parts used and identified for easy replacement at your local supplier.

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✓ Hand carried case for portable use.
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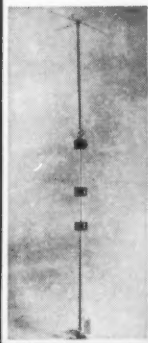
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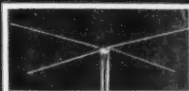


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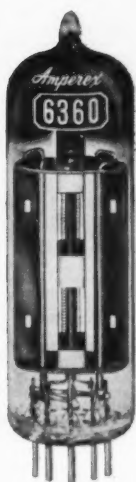
Phone 2-0277

messages were of emergency nature. A sincere thanks to all who participated. The annual election of officers of the Mankato Area Radio Club was held with the following being elected: RAK, pres.; QKA, vice-pres.; K0ALL, secy.-treas. OPA recently had his 25,000th QSO. K0BFS and K1JZ made BPL this month. K5MIZ is a new ham in Brewster running 40 watts homebrew and receiving with a soup-e-n-up Echophone all-band receiver. BUO is now with Minnesota Mining and Manufacturing. K0BLD worked VQ2PL on 6-meter phone. The Minnesota Noon Phone Net has moved from 3825 to 7215 kc. until conditions improve on 75 meters. The time still is 1205 CST. VBD renewed his ORS appointment. Activities were hampered for MJC by a few days in the hospital. We heard that OJG worked England on 75 meters. New hams in St. Paul are K0ERP and K0IDA. PBV is NCS of a new RACES net, with stations from 20 counties in Southwestern Minnesota reporting in. It meets Sun. at 1330 CST on 3805 kc. ITQ is back in Minneapolis after spending the winter in Southern Texas. New ECs are QDZ for Nobles County and UOX for Redwood County. A new club in the Mound Area is the Triangle Radio Club, made up of hams from 3 counties. Officers are IRM, pres.; QQW, vice-pres.; WEA, secy.-treas. RQJ vacationed in New Orleans and Dallas. The Lake Region Amateur Radio Club had a booth at the Builders Show in Fergus Falls. K0BUE was set up in the booth taking messages and acquainting people with our wonderful hobby. Hope to see you all at the convention in St. Paul. Traffic: (Mar.) W0KJZ 400, K1G 255, K0BFS 119, W0ALW 109, QDZ 109, K0DNM 104, W0RLQ 100, K0HUD 98, W0DQL 97, KFN 89, K0EPT 65, W0VBD 60, K0ADI 42, W0UMX 42, OSJ 41, WMA 39, UNG 34, LUX 33, IYP 31, TCK 25, K0CAZ 22, HNN 20, W0OJG 20, QVR 20, JIE 19, EMZ 18, FGP 16, TQO 14, K0GQZ 12, W0PBY 12, KXW 11, K0AEE 10, CVD 9, W0ELZ 9, HEN 7, IWA 7, K0HKK 5, W0LIG 5, NGA 4, TOK 4, ZMK 4, H0V 3, K0DEI 2.

DELTA DIVISION

ARKANSAS—SCM, Ulmon M. Goings, W3ZYY—SEC: VKE, PAM: DYLL. Activity reports for the month of March have been very light. CAM is holding skeels with son Jim in Florida on 15 meters. CRK has a new 10-meter beam up and is really giving it a workout. DAG now has worked up to 450 watts on his new linear amplifier. We are most happy to have 0JHY/5 join our section. VQJ finally has gone s.s.b. with a 20-A and a pair of 813s running a kw. GWB and KAN are very happy these days, having raised their rank from Technician to General Class. K5HOL now has a Viking II and it is said he never lets the flaments cool on it. The coverage of the Arkansas Emergency Phone Net has now been extended to operation from Mon. through Fri. on 3885 at 0600. This net previously was held on Mon. only. We invite traffic from all sections for this net. We want to encourage all Arkansas amateurs to support this net with their participation. I was very glad to meet so many on the band for the April LO Party. We are badly in need of more activities reports for this section. Won't you please send in your reports? Traffic: W5KRO 75, DAG 23, WSM 8, ZZY 3.

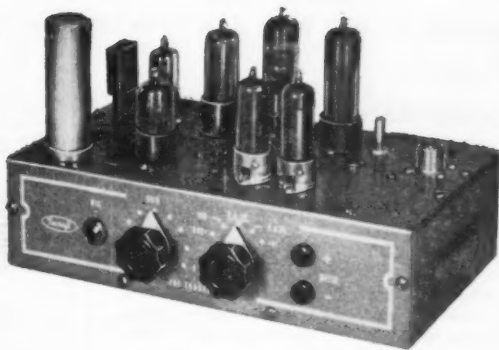
LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—PAM CEW is now a member of RACES and is taking over one shift at Shreveport C.D. Hq. as radio operator. Al reports 68 contacts and 41 countries in the DX Contest. K5CEC runs a Phasemeter II on 10 and is a member of the Mid-Continent SB Net, which is managed and directed by DGB. The net meets each night on 7206 kc. at 6:30 p.m. CST. K5ANI is active on 10 through 40 meters. Chief Operator Bill Wyatt, AA5WBN, is due for a discharge and is heading back to Danville, Ill. K5DGI was erroneously reported on s.s.b. He now has a new 10-15-meter quad up that really works. LXE made BPL in March. MNQ still having trouble with the new rig but manages to meet all nets and handle traffic. The Early Bird 6-Meter Net has been started by K5HWN with 5 stations reporting. K5GFB is now on 6 meters. SUA and K5HWZ have joined AF MARS. CYF is having speech amplifier trouble with the new rig. K5DDH now is operating in a new ham shack. EA has been appointed Alt. Radio Officer in Area 4 C.D. K5ACI is active on 40 and 75 meters meeting nets and handling traffic. INL has been appointed Radio Officer for e.d. in Area 1-A. K5CWQ was appointed for Area 1-B; KU/SHF for Area 2; SKW for Area 3; HEJ for Area 4 and SQB for Area 6. Area 5 still is vacant. They will be responsible for communications in their own areas and from their areas to State Net Control. K5BES, who is SEC, also is Radio Officer for the Louisiana e.d. The Jefferson Amateur Radio Club is now affiliated with ARRL. Write the SCM for dope on ARRL appointments or check to see if your appointment needs endorsement. Traffic: (Continued on page 116)



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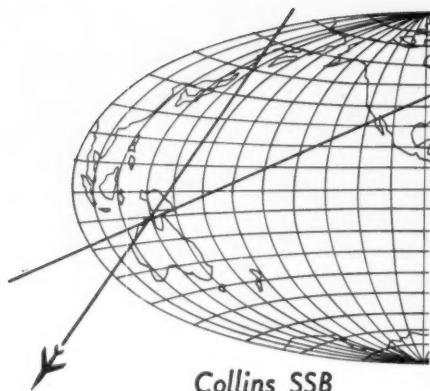
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MISSISSIPPI—SCM, Julian G. Blakely, W5WZY—Congrats to CBW, pres.; and to YAA, secy., on getting the Two-Meter Net going on the Gulf Coast. VKV, the NCS, is looking for DX contacts from up-State with his rotatable dual array—power 100 watts, v.f.o. We are sorry to lose EDE from the section. We wish to welcome K5JLX to the section. Dave is ex-8BQC/-8NSU/2YXL/8MZ1/3MZ1, and needless to say is a member of the Old Timers Club. VMC is active with 300 watts on all bands. K5IGV graduated from mobile to 300 watts phone. BEK is RTTY and looking for contacts. FPI, our RM, reports some progress in the Section C.W. Net. Contact him on 3645, 3935 and 7108 kc. Traffic: W5FPI 191.

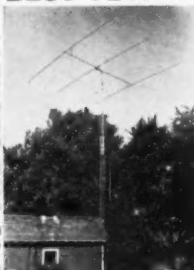
TENNESSEE—SCM, Harry C. Simpson, W4SCF—SEC: RRV. PAM: POP. RM: IV. DCH, trying out his new 50-ft. tower and three-band two-element beam, worked 142 stations in 33 countries during four hours of operation! UVU is building a new kw. rig, also has a new 100-watt mobile, and reports NEG and EMY are new Athens 6-meter stations. HSK reports 6-meter auroral openings during three days in March. YRM has a new 60-ft. tower, works 200 miles consistently on 6 meters, and reports that OJL, KYO, JPF and EZG are now on 6 meters in his area. The Memphis 6-meter group formed the Tri-State Net, meeting on 50.1 Mc. at 0800 CST on Sun. EWC and SCF visited SJJ, HSK, ZNW and others in Atlanta and enjoyed meeting with ARW and the Marietta Club immensely. The Memphis Club was treated to a discussion of the Arends-Roland Comet. FCC's quarterly exams in Memphis, under the capable supervision of ARW, were held recently with 44 ham and 151 commercial exams being given in the 2-day session! Our thanks to K4ECW, secy.-treas. of the Oak Ridge Club, for her very fine detailed report on activities of this great organization. SKH/4, the club's station, won the blue ribbon at the Oak Ridge Hobby Show and handled 101 messages for the Women's State Bowling Tournament. SGI, VWT and HSH were panel members at the Oak Ridge meeting, capably discussing mobile operation. This club's meeting dates have been changed to the 2nd and 4th Tue. of each month. IFN reports that K4KBK has been ill. He introduces a new Milan ham, K4MEJ, and says farewell to another, 5ZKA/4, who is leaving for other parts. K4KCC, tired of conventional frequency multipliers, is now raising rabbits! IFN is the proud owner of a 75A-3. POP says PHQ did a wonderful job on the new TPN rosters. WQW reports he has been handling traffic on 20 and 40 meters. VNE worked 52 countries on 10 meters, including his old friend ZE3JP. K4LPW, still chasing DX, now has 132/57. IGW, IPO, KJC, GMQ, OKT, ASL, HRE, JCC, EZS and WTP have applied for Army MARS. ZBQ, whose major activity is v.h.f., managed to handle 69 messages! K4HJN is a new TN member in Knoxville. His many friends will welcome 6EVC (ex-4YIP) back to Tennessee permanently. PL comments that 85 signals and 89 static makes traffic-handling somewhat of a problem on 40 meters. K4DIZ's ankle, hurt while QLF, has mended. Traffic: (Jan.) W4PL 882, K4DIZ 268, W4SKH/4 110, POP 102, VJ 101, ZBQ 69, SGI 52, UVL 52, EWC 47, OGG 44, VNE 42, SCF 41, WQW 40, YMB 29, K4GEL 27, W4UIC 24, K4BMC 16, W4IGW 16, DCH 10, K4LPW 10, W4HUT 4, CLM 2, HJN 2, CLQ 1, ECW 1, EVC 1, HHK 1, HSX 1, IFN 1, TIE 1, TIZ 1, UVU 1, YRM 1. (Feb.) W4POP 141, IRI 94, UVU 2.

GREAT LAKES DIVISION

KENTUCKY—SCM, Albert M. Barnes, W4KKW—SEC: JSH. PAMs: VJV and SUD. RM: QCD. Heartiest congratulations to the two newest ARRL club affiliates, the Mammoth Cave Amateur Radio Club in Glasgow and the Warren County Radio Club in Bowling Green. That brings the total ARRL affiliated clubs in Kentucky to eight, including the Amateur Radio Transmitting Society in Louisville; the Harbin County Amateur Radio Assn. in Elizabethtown; the Audubon Amateur Radio Society in Henderson; the Owensboro Amateur Radio Club in Owensboro; the Blue Grass Amateur Radio Club in Lexington and the Paducah Amateur Radio Club in Paducah. This is enough to have a council of Kentucky clubs organized to really get the hams of Kentucky working together constructively. KPN is going strong with forty active members. PAM VJV and SUD recommend K4CJI, K4HCK, HJI, K4HTK and K4IAA for section Net certificates. RM QCD is lining up more NC8s for KYN. KKG went to the Dayton Hamvention and had a fine time. KZF has a new beam on 6 meters. HOJ is using a new electronic key now. JGN is active on 15 meters for WAC. CDA has his 100TH rebuilt for 40 meters. HJI has a new 20-meter beam looking for DX. Traffic: W4ZDB 505, (Continued on page 118)

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MICHIGAN—SCM, Thomas G. Mitchell, W8RAE—Asst. SCM (phone) Bob Cooper, 8AQA; Asst. SCM (c.w.) Joe Beljan, 8SCW. To those of you who may have not heard as yet, it was my duty this month to accept the resignation of GJH as our Section Emergency Coordinator. The press of personal business brought about the decision on Gary's part after nearly nine years of service in that office. Being aware of the countless hours that he devoted to service on our behalf, I feel that words cannot adequately express our appreciation for the many accomplishments that were brought about through his efforts. I take the liberty here to thank him for all members of the Michigan section and to wish him the "best in hamming" for the years to come. He has kindly offered to assist in any way and I am sure that we will find many occasions to call upon him for help in the months to come. The section of a new SEC will necessarily take some time and the aid of several persons besides myself. In the interim, any correspondence normally involving the SEC may be directed to this office as I will do all possible to carry on as the Acting SEC. All ECs will be kept posted on the AREC situation via direct mail bulletins from this office. Speaking again for the members of the section, I should like to express our thanks to the Grand Rapids Amateur Radio Association for its efforts which resulted in another excellent convention again this year. The club's reward can best be found in the growth of the attendance figures and in the many compliments heard over the air. Section-wide activities such as this convention are very essential to maintaining the active organization we have in Michigan and we are most fortunate in having so active a club in that geographic location to sponsor the event. Traffic: (Mar.) W8ELW 961, LLP 198, YAN 122, NUL 118, DAP 111, K8NAW 103, W8FX 82, FWQ 65, ZLK 63, NOH 59, SCW 44, RTN 41, OCC 33, AUD 31, RVZ 29, TBP 27, OGY 24, WXO 23, QIX 22, RAE 17, HAV 10, DSE 7, HKT 6, EGI 5, MSK 4, FGB 1, QOQ 1, (Feb.) W8QOQ 101, TBP 25, OCU 6, MSK 2, SWN 2.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. SEC: UPB, RMs: DAE and FVO. PAMs: HPP, HUX and HZJ. PLQ, FPZ, ILC and RXM helped in the Ky. Emergency Net. New appointments: STP as OO and HZJ as OO and PAM. *Ether Waves* reports the editor's daughter is now KN4MWC. JRB made the honor roll of CQ magazine with 36 zones and 137 countries. LPD worked ZE2 and VQ2 on 6 meters. Springfield ARC's Q-3 reports RWZ, OKB, OG and JRG hold WAC phone; BMC, OKB, OG and JRG hold WAC c.w.; VZE, QCU, KQW, OKB, OG and JRG hold WAS; JRG holds DXCC and EQN holds Worked All Ohio Counties (WAO). The club also held a successful auction. K8CLS received his General Class license. KRU joined the Navy. JRG is running a full gallon using a pair of 4-250As. KN8CUY moved to Marion and has a 75-watt rig on the air. SQU received his first 50-Mc. confirmation from England. KN8BNB had FUR80 answer his CQ on 15 meters. QXW received a WAVE certificate. KN8DYW has a new antenna. 9VBV/8 is working DX on 15 meters. Toledo's ham of the month is JEX who is the principal of Waite High School and an IRE member. Toledo's 6-meter round table consists of BTN, EBR, RBQ, WTD and Ks ALK and DWY. BMA received his General Class license. INR is working DX on 40-meter c.w. PDY has a 32-element beam on 432 Mc. and can be heard on 2 meters and 220 Mc. Toledo RC's 1937 officers are BHL, pres.; MUK, vice-pres.; MQQ, rec. sec.; AAS, corr. sec.; and DN, treas. QIE vacationed three weeks in Florida and Cuba. HXB needs Delaware and Arkansas for WAS mobile. UPH has worked 21 countries. The Massillon YMCA RC's officers are VYU, pres.; KN8EKG, vice-pres.; KN8EJR, trans.; and KN8EJN, secy. STI's XYL presented him with a baby boy. We hope WPV has fully recovered from the accident to his left hand. The Fort Hamilton ARA operates a theory class. Columbus ARA's *Carascope* reports TOO spoke to the club on "Measurement by Means of Radioactivity." JND enlisted in the US Air Force. SJQ has a new 10-meter beam. More new appointments are MVE as OBS; SGX and GEZ as ECs. The Governor of Ohio has set aside the week of June 16 to 23 as Radio Amateur Week. Traffic: (Mar.) W8UPH 784, VTP 716, SZU 265, GFE 188, DAE 110, HXB 100, W9VBV/8 51, W8IIR 50, AL 46, VYU 45, K8DDG 25, W8LZE 12, ARO 9, AQ 6, HZJ 5, LMB 5, EEQ 4, QIE 3, (Feb.) W8FBX 14, PLQ 5.

(Continued on page 120)

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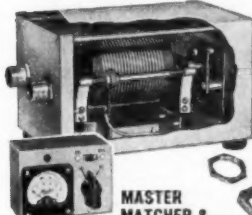


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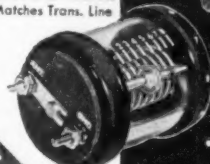


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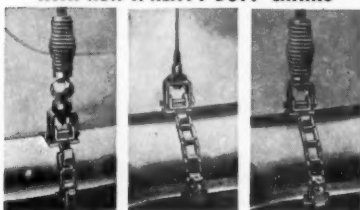
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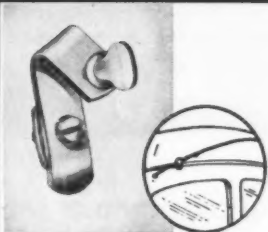
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HUDSON DIVISION

EASTERN NEW YORK—SCM. George W. Tracy, W2EFU—SEC: KGC, RM: BXP, PAMS: GDD, JIG and NOC. Section Nets: NYS on 3615 kc. at 1900, NYSPTEN on 3925 kc. at 1800, SRPN on 3980 at 1130, IPN on 3980 kc. at 1530, MHT on 3716 kc. Sat. at 1300, JZK was speaker Mar. 8 at the Albany Assn. NYSPTEN certificates were awarded to K2GCI and NZM for regular attendance. The Crystal Radio Club sponsors an "on-the-air" activity program each month. Members must work specified objectives and confirm with QSLs. If you want full particulars for your club, drop a line to EH2. New appointment: K2TAZ as ORS. The Radio and Radiological Service topic for the March Schenectady Assn. meeting was presented by specialists at GE's Research Lab. A Spring Cleaning Auction brought a large ham group to the Apr. 5 meeting of the Harmonic Hill Radio League at Mount Kisco, SZ, the RPI Club, has finished a new 6-meter amplifier using p.p. 4-65As, which should put them on the map from their hilltop QTH. WQL is trying out 20-meter phone with a new vertical antenna. All E.N.Y. Novices are invited to join the Mohawk Hudson Training Net (MHT) listed at the beginning of this column. All appointees are reminded to check the expiration dates on certificates and send them to the SCM for endorsement. K2HPQ set up a rig to handle traffic at the Boy Scout Show in the Albany Armory. State Radio Officer BGO reports a communications exercise for the State RACES Command Nets on 3993 and 3509.5 kc. will be held on June 16. The fourth anniversary dinner of the Harmonic Hill Club was held recently. The club combined with the Westchester Club to witness a demonstration by AMJ, of Hannamund Mfg. Co. Traffic: (Mar.) W2BXP 470, PHX 173, EFU 146, ATA 131, K2QVA 63, LKI 55, HPQ 52, CKG 23, HNW 6, W2BSH 5, TYC 3.

NEW YORK CITY AND LONG ISLAND—SCM. Harry J. Dannals, W2TUK—SEC: ADO, PAM: OBW, RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 ESDT and Sat. at 1915 ESDT; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 ESDT; NYC-LI AREC, 3908 kc. Sun. at 1400 ESDT. Our section nets plan to continue full-time operation during the summer season. Check in on these nets as often as possible—you will find the welcome mat always out. OBW reports one of the best months on NYC-LIPN with 110 stations handling 382 messages. K2DEM made the WNH and W-Del certificates and also received his YLCC-150 endorsement. The gang at AEE has completed WAC and WAS on 75 meters. K2VXX has received his Novice and Tech. Class tickets. K2PGP now has 63 countries. K2KXZ is now using a Matchstick vertical. A new DX-100 and three-element 10-meter beam are in use at K2PHK. New members of the Tu-Boro RC are K2s DZO, OHK, QPP, VBH, VBI and HB90I. K2RKL has a new VHF-152-A and 220-Mc. converter. He is soon to be heard on 30-Mc. s.s.b. A new antenna at K2AAW has improved his signal. K2EEK soon will be heard on 220 Mc. with 20 watts to a seven-element Yagi. New officers of the Frog Hollow RC are GFK, pres.; K2IEH, vice-pres.; JU secy.; and K2QOP, treas. K2EOR has his new kw. ready to go. All MARS members interested in operation on a v.h.f. net should contact K2EQH for information. HQL received his DXCC-170 endorsement and added a Collins 310-B exciter to his shack. IN is operating on 50 Mc. from Staten Island. K2CCM is looking for 220-Mc. activity in the vicinity of his Massapequa Park QTH. K2DDK is returning to operation on 80 and 40 meters after many months of v.h.f. work. K2OUD has worked 32 states and now has an S-29 receiver. The Midwood HS ARC, Brooklyn, has the club station, YTU, back on the air. K2SNM dropped the "N" after finishing his Novice term with 36 states worked on 40 meters. K2KND is half way to DXCC with 56 countries. The new two-element 10-meter beam at K2UOY is increasing his DX total, with only Africa needed to complete WAC. K2PAY is now on 144 Mc. K2MYW and his Valiant need only Utah and Wyoming for WAS. K2ZUBG worked a WH6 on 40 meters with his Adventurer and NC-300. K2NYK is on 80 and 40 meters. The Hillcrest RC, with operators K2s LIO and QEP and K2Ns UDT, UFS and YQL, worked portable with a Communicator on 2 meters from the Sanita Hills Boy Scout Camp at Holmes. New 6-meter stations on the 50.25-Mc. net are K2s KOH, PQY, QUH and SNW. K2UJT is working airborne mobile with a Gonet on 50 Mc. HAE has a new DX-100. MQB/4 sends an early warning from Tennessee that he'll be very active in this year's "SS" from East Hampton after retiring from 20 years of Navy service. KH6BPZ/2 is running a Viking I and SX-99 and is awaiting the return of his K2DDC call. HQD joined the married ranks. BQP is off to DL4-Land. K2LUR still is looking for Utah to complete her WAS. K2PWH built the QST "TVI Special" for 50 Mc. and reports

(Continued on page 122)

GO "MOBILE" in minutes!



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FEATURES

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RF Final	5763	6417
Audio Preamp.	12AX7	12AX7
Audio Output	6BK5	12BK5
Voltage Reg.	OA2	OA2
CONVERTER		
RF Amp.	6AK5	6AK5
Osc.-Mix.	6UB	6UB

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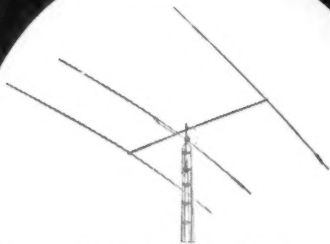
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satisfactory operation. KN2YJC is looking for DX with his 25-watter. Your SCM's brother now signs 5ZRA/6 from the Golden State, while OM, CG, soon will be heard from the Sunshine State in W4-Land. Good luck on Field Day and remember your extra credit messages to the SEC or SCM. See you from YKQ/2. Traffic: (Mar.) W2KEB 2198, KVF 688, K2DEM 342, KND 253, PHF 189, AMP 185, ECV 138, W2AEE 134, K2QZS 100, W2BO 89, K2PSE 68, BH 64, W2TUK 43, DRD 39, K2CRK 36, PGP 35, W2GP 29, K2LUM 24, W2UGF 24, K2RJO 23, GLP 21, W2PF 17, K2KSP 16, UOY 16, KXZ 15, W2DID 11, JGY 11, K2ZGR 10, W2IAG 8, EC 7, K2RKL 7, DQD 6, W2IVS 6, K2AAW 5, EEK 4, W2JBQ 4, K2EQH 3, GHS 2, KIX 2, W2LPJ 2. (Feb.) K2LTI 267, KND 30, KSP 30, EQH 15, UOY 14, PAY 13, MYW 7. (Jan.) K2EQH 76.

NORTH NEW JERSEY—SCM, Lloyd H. Manamon, W2VQR—SEC: IIN, PAM: VDE, RM: BRC, NKD and CGG. The Penn-Jersey Radio Club dinner was a huge success with 50 in attendance. K2QYI has increased power to 120 watts and is working out very well on 20, 15 and 10 meters. His rarest DX catch so far is ITIAGA on 40 meters. MLW made BPL for the third time and is eligible for a medallion. Frank is the first member in NJ to receive this award. NJN report for the month of March: Sessions 31, attendance 467, traffic 232. New stations on NJN during March were WOJ, KFR and K2MUE. RG, ZI and BZJ are conducting operator training for RACES c.w. net operators. VDE took part in the New Hampshire QSO Party and worked all ten counties plus a score of 320 for a WXB certificate. EWZ is TVI-proofing the transmitter. BRC changed his QTH to 427 Railway Ave., Elizabeth, on May 1. K2AFQ is looking forward to the coming summer vacation from college so that he may catch up on his OO activity. K2BHQ is building a new mobile rig for 10 meters which will be used for transmitter hunts. GUV is working on his s.s.b. rig. The Livingston Amateur Radio Club held its annual dinner in Cedar Grove with 28 members and their XYLs attending. K2JTU is a regular member of NJFN. K2OAM is NCS for TCPN on Thurs. nights. The Stevens Radio Club of Hoboken became an affiliated club in March. Good luck and let's hear from you monthly. AZL and CXY were recent speakers at the Central N. J. V.H.F. Society meeting. This group is very active in the Satellite Tracking Project and has obtained a field site in the western part of the State for future operations. The group needs information on antennas for this project and desires assistance from anyone who can help out on this subject. TTM is the motivating force behind this group. The members lay claim to being the hottest v.h.f. group in New Jersey and desire recognition in the respective columns of QST. CVW worked eight new countries in the DX Contest. K2MLN reports a new net in the Forty. NNJ Net. It meets on 7105 kc. at 1715 EST daily. New members are solicited. VMX reports that his XYL, KN2UXJ, is attending code classes at GSARA. K2RGS has his DX-100 back on the air with an assist from K2OCW. K2GBP was home on leave from the Naval Academy. K2SZO has a new 40-meter antenna. K2SKK is going RTTY with the home call, IZXA. The NJFN is having a special sticker made for QSL cards of net members. K2PIM received a new "Bug Key" on his 15th birthday and went right out and picked up seven new countries and a new continent with the new key. VCZ has a new Viking KW, greatly increasing his OBS range. K2GIF is MARS director for New Jersey. IRO has been appointed Field Day chairman for the Tri-County Club. K2KFE and K2BZX were hosts at a recent meeting of the RBRA. Guest speaker was VPL, who lectured on transistor circuitry. K2KFE has been appointed Field Day chairman of the RBRA. K2GE now is active on 40-meter c.w. New members of the Irvington Radio Amateur Club are K2TYC, VEY, KN2SOM and UGE. KN2YZD is a new ham in Northern New Jersey. DLS was a recent speaker at IRAC. K2ICE has worked OUS a total of 1069 times. This is quite a record for both of them. K2IPR has a new NC-300 complete with converters. YLS is madly at work on his new Viking 500 kit. K2DHE has a new Ranger and 6N2 rig. Traffic: W2MLW 489, VDE 147, K2EQP 130, W2BRC 119, K2AJV 63, MLN 58, BHQ 57, MMM 43, W2RXL 38, DRV 34, K2OAM 29, W2VMX 28, K2MEF 27, RGS 25, W2ZVW 18, K2GAP 16, W2OXL 12, K2BWQ 10, EMJ 10, W2KFR 10, CVW 9, K2GIG 5, W2CJX 4, K2SKK 4, W2NYI 3 WOJ 3.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, W8BDR—One hundred stations of the 75-Meter Phone Net participated to furnish emergency communications for two railroads, A. P. and Western Union during the worst spring blizz-
(Continued on page 124)

BLILEY NOVICE BAND CRYSTALS



AX2

BAND	MULTIPLIER	CRYSTAL FREQ. RANGE	TYPE	PRICE
80 Meters	1	3700.0 to 3750.0 kc's	AX2	\$2.95
40 Meters	2	3587.5 to 3600.0 kc's	AX2	2.95
40 Meters	1	7175.0 to 7200.0 kc's	AX2	2.95
15 Meters	1	21,100 to 21,250.0 kc's	SR10	8.50
15 Meters	3	7033.33 to 7083.33 kc's	AX2	2.95
15 Meters	6	3516.66 to 3541.66 kc's	AX2	2.95
2 Meters	6	24,166.66 to 24,500.0 kc's	SR10	8.50



SR10



BLILEY CRYSTALS FOR SPOT FREQUENCIES IN NET OPERATIONS



MC9

TYPE	APPLICATION	TOLERANCE	PRICE
MC9	3 mc-12 mc experimental frequencies	$\pm .03\%$	\$6.50
SR10	12 mc-27.5 mc experimental frequencies	$\pm .03\%$	8.50



SR10



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KV3



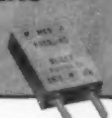
SR10



CF6



AX2



MC9

TYPE	APPLICATION	TOLERANCE	PRICE
KV3	Reference Frequency 100 kc	$\pm .005\%$	\$9.50
MC9	Marker Frequency 1000 kc	$\pm .05\%$	8.00
MC9	13.6275 mc (Multiplier to 27.255 mc) CITIZEN'S RADIO SERVICE (CLASS "C")	$\pm .04\%$	5.50
SR10	27.255 mc (3rd Overtone Crystal) CITIZEN'S RADIO SERVICE (CLASS "C")	$\pm .04\%$	5.50
CF6	455 kc — 456 kc — 465 kc Single Signal Filters	± 5 kc	4.50
AX2	1800-1825 kc; 1875-1900 kc; 1900-1925 kc; 1975-2000 kc	See Note A	3.75
AX2	3500-4000 kc; 7000-7425 kc; 8000-9000 kc	See Note A	2.95
AX2	14-14.5 mc	± 10 kc	3.95

Note A: We will supply to integral spot frequencies (no fractions) as ordered; calibration ± 500 cycles in factory test oscillator.

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This compact temperature controlled package provides a high stability reference source at both 100 kc and 1000 kc. Precision reference for general amateur use.

TYPE	DESCRIPTION	STABILITY	PRICE
TCO-2L	6.3V Oven	$75^{\circ}\text{C} \pm 5^{\circ}\text{C}$	\$ 9.00
BH6A Crystal	1000 kc	$\pm .0002\%$	12.50
BH9A Crystal	100 kc	$\pm .0005\%$	11.00



TCO-2L

Crystal units described are calibrated in recommended oscillator circuit—adjustable to zero beat (at 75°C) in this circuit.

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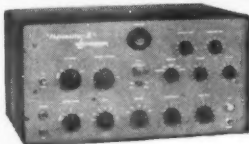
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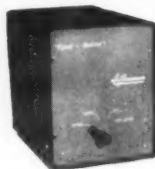
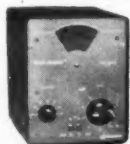
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zard in the Midwest in many years. The list of stations is too long to mention here but our thanks and congratulations for a good job. HWW and EFL were re-elected president and vice-president of the Central Iowa Radio Club, with GJT being elected vice-pres. New officers for the Des Moines Tech High School Club are YDI, pres.; SMS, vice-pres.; K8CLS, secy.; ZAQ, program chairman; K8APS, publicity chairman. QVA reports the following new Tall Corn members: K8CYF, GBD, GXC, W8SLC and COD. YDI has received an OPS appointment. It is our sad duty to report that WCC and GAF have joined Silent Keys. The Hamilton County Radio Assn. is now ARRL affiliated. LGG reports that the annual TLGN Party will be held in Des Moines on June 1. The Cedar Valley Club has reached an all-time membership high of 115 members. CZ has received his traffic medallion. CNX has received a 100 Club Trafficers certificate. UJC Asst. SCM has a new 75A-4. New Novices reported in Webster City are KN8RW, JDK and JCS. Traffic: (Mar.) WBDR 1701, PZO 1471, SCA 1440, LCX 1047, LGZ 808, CZ 312, GXQ 287, BLH 142, YAL 139, UTD 122, KVV 117, QVA 102, KDZX 96, W8NGS 72, VWF 65, K8AAH 38, AIC 24, W8FMZ 24, LJW 23, UTX 23, K8CLS 22, W8GQ 17, K8WAD 15, W8WLT 15, AHZ 14, K8CYT 14, W8YI 14, K8REC 8, W8CGL 8, REM 7, DM 6, SHD 5, DJY 4, SLC 4, QQA 2, ZPM 2, HNE 1. (Feb.) W8GQ 8.

KANSAS—SCM, Earl N. Johnston, W0ICV—SEC: PAH. PAM: FNS, RM: QGG. Handling storm traffic during the Great Plains Blizzard of Mar. 23-26 was the chief activity for most Kansas amateurs in March. The newly-organized Fort Hays QSO Club and its station, QML, got a good workout in the blizzard. Officers are WAY, pres.; K8CBN, vice-pres. and act. mgr.; and TSD, secy.-treas. Faculty sponsors are K8HHC and RBO. The Scott County Amateur Radio Club issues certificates to those working all its nine members—YLO, ROZ, MI, QNJ, EUP, ZUX, BYV, K8DIW and K8DZF. UOL, of Herndon, helped care for 57 stranded persons in the blizzard besides handling emergency traffic. VBQ is new president of the Lawrence ARC. The Smoky Valley Radio Club of Abilene has just become an ARRL affiliated club. YVM, of Chanute, is moving to Butler, Mo. NSH is going to high-power. FQF has just completed a 600-watt rig. LQV is on RTTY. The KVRG, of Topeka, is getting ready for Field Day. The club has a new 5-kw. power plant. KXB, operating RTTY, is a new OBS. At Wichita LZJ is a new OBS on 10 meters. Here's a record-breaking traffic report, thanks to FNS and storm reporters. Traffic: (Mar.) WBLL 439, TOL 348, NIY 317, FNS 296, QGG 261, OHJ 195, QML 185, K8BXF 122, W8IFR 101, YLM 93, QQQ 86, UOL 81, YLO 72, ONF 70, ABJ 66, OKH 60, BET 56, SAF 55, IHN 32, KN8HSF 46, W8FON 42, SYZ 41, FDIJ 35, WWR 34, ICV 30, ROZ 30, TNA 30, LOW 25, JDX 22, KN8HYG 20, K8DIW 19, W8MXG 16, ONI 16, SZF 11, DEL 10, LIX 10, SKW 9, VGE 9, K8BJD 7, W8UTO 7, YVM 7, MI 6, ALF 5, ITO 4, KQC 4, QVO 4, K8AHW 3, BIX 3, W8YIP 3, DIP 2, OAG 2, K8DZF 1, W8LQX 1, QNJ 1, UAT 1, WMV 1, ZUX 1. (Feb.) W8OAG 50, QQQ 44, VZM 8, UAT 1.

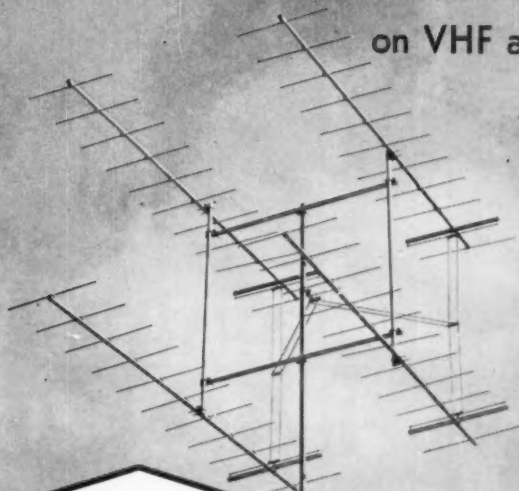
MISSOURI—SCM, James W. Hoover, W0GEP—SEC: BUL. RMS: OUD and QXO. PAM: BVL. BUL has been appointed Section Emergency Coordinator. The Missouri School of Mines Radio Club has received ARRL affiliation and has just completed a new shack for the club station, EEE. K8DEY received a 20-w.p.m. Code Proficiency certificate. The St. Louis Amateur Radio Club held a Ham Hop, featuring an all-ham band, with 50 hams in attendance. OIV has a higher-powered final with push-pull T-55s. WFF has received a WAS certificate. The Three Rivers Ham Club, Appleton City, doubled its membership to 14 during the last year. JEG is the club president. K8MYI, age 13, has 34 countries confirmed. K8BIB has been elected president of the Harvard Wireless Club at Harvard University. The Cass County Civil Defense Net now operates on Tue. only, 3504 kc. 1930 CST. ZSL put up a 2-band quad, 45 feet high, which lasted through the DX Contest and then succumbed to the wind. The St. Louis Amateur Radio Club Net, 51.9 Mc., had a record attendance of 25 on Mar. 25. Traffic: (Mar.) W8CPI 1105, GAR 534, VPO 355, BVL 216, UXT 208, OUD 90, GRJ 91, YVM 70, KIK 59, WAP 59, VJD 58, IIR 46, MHS 42, RTW 34, CKQ 31, EEE 29, HUT 27, EBE 24, YKC 22, WFF 21, KA 20, K8AQO 19, W8LQC 18, BUL 11, K8IHY 11, W8WYJ 11, EPI 10, OVV 10, K8CCL 6, W8GEP 6, K8HBC 6, DEX 5, W8VFP 3, K8DEY 2, W8WYV 2. (Feb.) K8AQO 32, W8VFP 22, VEP 7, EDA 5, KA 4.

NEBRASKA—SCM, Floyd B. Campbell W8CBH—SEC: JDJ. PAM: MAO. UJK and NHT maintained a communications link between Fairbury and Philipburg, Kans., during the recent snow storm. Crews and trains

(Continued on page 126)

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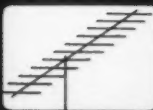
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All "Quads" stacked 1 wavelength high and 1 wavelength wide, and are available complete with stacking masts, stacking bars and Q sections for $\frac{3}{4}$ - $1\frac{1}{4}$ and 2 meters.



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A-50-5	120"	9.0
A-144-7	98"	10.0
A-144-11	144"	13.0
A-220-11	102"	13.0
A-430-11	57"	13.0

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RotoBrake Mounting Plate (Cat. No. 69A097)	1.65

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48 ft.—Cat. No. 69A096	129.95
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were dispatched and train orders relayed. QHE, FTQ, FRV, FLF, YMU, AYS, ERM, HTA, HQN, ZSW/M, SPK, IXB, ZNI, PNV, YOS, TIP, AEM, EXP, FXH, LJO, MAO, NGZ, OOX, VGH, CC, NRT, XPM, EUT, QMY, BOQ, EFV, HOP, HQE, KLB, LEF, SPV/M, NHS, PDJ, VZJ, ZJF, ZOU, VUO, NZ, NRJ, MKF, HXH, EQG, YRE, DBH, LUS, VAT, KFY, DDP, CGE, LWR, FBV, CDG, BXY, AFL, WBF, BDF, FBD, EPI, NRL, EWM/M, DUU, BRS, DGW, BSG and EWU assisted during the storm. The Wheat Belt Net has changed from 3825 to 7240 kc. (1230 Sat.) for the summer. DX on 15 and 20 meters is booming at Scottsbluff. K0DFO needs information on XFIA. KDW is EC for Danbury and vicinity. The Falls City Amateur Radio club has a school of instruction for radio theory and code to train radio operators for civil defense. ORW/6 is looking for Nebraska on 10 meters mobile (28,950 kc.). YHN has the new exciter operating on 10, 15 and 20 meters. FLA has installed his rig in a nice cabinet in the living room. CSW is cutting a rug on 10, 20 and 40 meters. YUF is building "multitudinous" verticals in his back yard. KFE made a test run of his new transmitter and is now in full swing. K0BDF is keeping regular skeels with 680U (nephew) on 10- and 20-meter phone and c.w. KYM was elected vice-president of the Prairie Dog Club (S. Dak.). Traffic: (Mar.) K0DGW 193, W0ZJF 138, MAO 106, NHT 84, UJK 60, NIK 58, K0DFO 51, W0IXB 41, ZWG 40, K0CDG 38, W0HQN 30, DQN 29, LJO 23, SPK 21, K0BDF 20, K0HUF 20, W0OCU 19, TIP 16, KDW 15, BOQ 14, QKR 13, K0ELU 12, W0EAO 11, ZWF 11, KLB 8, ZOU 8, OOX 7, VGH 7, HOP 6, PQP 6, QHE 6, URC 6, NGZ 5, CBH 4, K0ELQ 2, W0VRE 2. (Feb.) W0UJK 14.

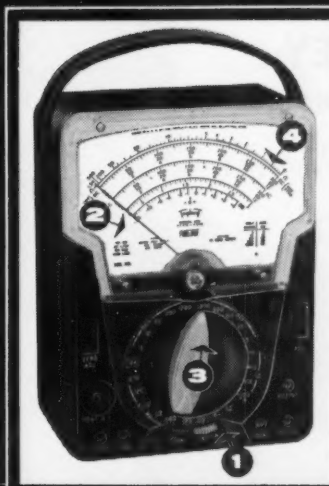
NEW ENGLAND DIVISION

CONNECTICUT—Acting SCM, Victor L. Crawford, W1TYQ—SEC: EOR, RM: KYM, PAM: YBH. Traffic Nets: MCN, Mon.-Fri. 0645 on 3640 kc.; CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN, Mon.-Sat. 1845 and 2200 on 3640 kc.; CTN, Sun. 0900 on 3640 kc. EFV reports MCN met 20 times during March handling 91 pieces of traffic. High QNI went to BVB and IBE, 20; RFJ, 19; EFV and K2EQP 16. YBH advises CPN held 31 sessions handling 225 messages for an average of 7.3. Total QNI was 797. QNI honors go to FYF, VQH and YBH, 30; HID, 29; VYI, 28. KYQ reports the early session of CN handled 299 pieces of traffic in 26 sessions with an average attendance of 13.2. Late session CN also met 26 times handling 77 messages with an average attendance of 5.1. With more daylight and outdoor work here why not check in the late session of CN. KN1BFJ dropped the "N" and is on 6 meters with a Communicator. IOV is mobile on 10 meters with a new Transcon. AW is a.s.b.ing with a B4W plus linear. BDI reports DX conditions good. CLH has 6X2 plus Tapetone converters. IUC has a new SX-100. KN1BKL is a new Technician Class licensee in Bridgeport. TYQ is on 2 meters with a Communicator and a six-element beam. EJH, assisted by RLD, GWW, FRN and JVQ, moved to a new QTH. WN1MDB is looking for QSOs on 21.225 kc. WZJ (ex-Mass.) is new in Manchester. KN1AVT and KN1BJU are new Novices in Winsted. ECH would like more stations to check in ESPN, 3840 kc. at 1530 daily. RFC and TD find little time for hamming because of work. HCZ enjoyed a trip to Florida. ETF reports the "Monimatch" from a recent QST works fine. KN1BIJ, BJK and BJL are new Novices in New Haven, thanks to WHL's code and theory classes. OO reports were received from BVB and DIF. CUT and FVV submitted OES reports. New appointment: ACR as ORS, Renewals: GVK and AVS as ORS, TCW and AMJ as ECs, URC as OES, Traffic: W1FYF 41, KYQ 308, TYQ 296, AW 265, YBH 261, EFV 243, RGB 126, IUC 121, AMY 117, GVK 88, DHP 86, AVS 74, HID 65, BDI 63, NJM 52, RFJ 47, CUH 38, VYI 35, EKJ 32, FHP 30, BVB 27, ULY 21, WZJ 19, ECH 14, EBW 13, YU 13, ACR 10, EJH 7, GEA 6, GJV 5, WN1MDB 3.

MAINE—SCM, Allan D. Duntley, W1BPI/VYA—As my term of office as SCM draws to a close, I want to take this opportunity to bring to your attention some of the highlights of my tenure. First, let me express my deepest sympathy to those of you who have lost loved ones during the past two years; there are several voids that can't be filled in our organization. Ours is a choice and honored group made up of people from every walk in life. I know of no other group or organization where everyone is known by his first name; a group that is ready at any time to help anyone regardless of the circumstances. Let me extend to all of you my thanks for your patience with me and appreciation of your untiring assistance. You have all been "swell." As I write this, my successor has not been selected. I sincerely hope someone will come forward to carry on

(Continued on page 128)

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the duties of SCM. I hope you will all understand why it is impossible for me to continue for another term. My duties in the Town are growing more and more every day and need my attention. I have tried to serve you well for two years and feel I have done my duty. Please continue to support the League and accept the various appointments available to you. Let's not forget the hamfest in August/June 16. The Calumet Club is the place. Traffic: WILKP 201, CEV 75, EFR 48, BCD 40, FZK 25, EPN 15, HYD 14, ULD 14, KFY 9, OTQ 9, FNU 8, FLY 5, GYJ 5, HGI 5, HZZ 2, HTD 1.

EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—This section is made up of the following counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk. If you live in any of the other five counties you are in the Western Massachusetts Section. New appointments: BCN, R.O. for Sector 2-C, as EC; SMO and FJJ as ORS; BCN and FJJ as OBS. Appointments endorsed: RCQ and AGX as ORS; AUQ as OO; ABJ, AR and HIL as OPS; BHD as OBS, KT Georgetown, VIN Carlisle, KEK Lynnfield, AR Belmont as ECs. Heard on 75 meters: KGU, ZBT, SON, LID, KSU, EUT, JSS, GAC, MA, WTY, GCU, GAX and K1AKX. On 2 meters: WHN, WC and K1BJG. MVM is new in Gloucester. K1ALP passed the General Class exam. GDJ has 250 watts on 10 and 15 meters. NF has a Mark 2 Monimatch. The GBARS had SX as a speaker. UNA bought a house in Marblehead. HIL gets on week ends on 75 meters. WJW now is at Raytheon. ATX has a DX-100 and is working DX on 80-meter c.w. BGW says the East Coast RTTY Net has between 12 and 15 stations reporting in each Wed. The Eastern Mass. Net is on 3650 kc. at 7 p.m. UE is on daily at 1300. DOF renewed as EC and OPS. HTU is on 50 Mc. with a TBS-50. BPW made BPL for the third time. FJJ was in the N. H. QSO Party. SMO is building up the amplifier with a pair of 813s. WU built a ground-grid final with a 304-TL. RCQ is hitting the DX. The Pequossette Radio Society is now affiliated with ARRL. HUB is secy-treas. EPE says 160 meters has been poor. AUQ lost the tree holding his antenna. LM is on the sick list. FJJ is on 10 and 15 meters with a DX-100. DDC is working all bands with an Elmac AF-67 and joined QCWA and OTC. Area 1 Radio Comm. met recently with ZYX, AR, TQP, KTG, ALP and IPA present. WZJ, who used to operate K1AIR, is on in Connecticut. ALP spoke at the GBARS Club. Everett has a 6-meter frequency for c.d. work. A general meeting of all members of the Central TVI Comm. of Greater Boston was called by Mr. Hallenstein of the FCC recently. SAD is now chairman of this committee. HDQ spoke at a meeting of the QRA. ALP attended and met a lot of the old gang. VRK took a trip to KP4-Land. AGX is helping out with code and theory. The Brantree Radio Club held a meeting. The South Shore Club is holding regular meetings twice a month. The T-9 Radio Club held its annual ladies' night at the Allenhurst in Danvers. ABJ is busy at school. ADX is R.O. for Truro. LRO is R.O. for Provincetown. CTZ is now R.O. for Sector 2-A. UIR is very active on the air on many bands and in several nets. THO, our 6-meter PAM, reports that AQJ, CFJ, CVD, EFV, EGE, ENS, EOA, EQW, EUL, FWP, GYZ, HFF, HVJ, IAA, ION, JGV, LJ, LOW, MDD, MEU, SAC, TCH, VXE, WAE, YEL, YDT, ZZZ, JIG and ZMM are all active. THO bought a heavy-duty battery for his Buick. QOI has mobile on 2 meters going again. Look for him at noon-time. AKN is feeling better. The Framingham Radio Club has a 6-meter net on 51 Mc. at 1945 on Wed. NJM and ICP spoke at one meeting. WYKRSX is new. VWZ is on 2 meters. KNIACM is PSG's XYL on 2 meters. DDC and AKN sent in EC certificates for endorsement, as did SPL as OBS. IWK has his Tech. Class license and will be on 6 meters. His brother is KNIBGJ and on 2 meters. BGW went to the IRE Show and the RTTY Dinner. TZ has a Luenberg beam for 2 and 6 meters. KTG, ALP, LLY, ZYX, DWY and TXZ were at the Area 1 Radio Comm. meeting. Radio Officers for Area 1 are as follows: Area 1 ZYX, Sector 1-A TQP, Sector 1-B ALP, Sector 1-C QJ, Sector 1-D KTG, Sector 1-E AWA, Sector 1-F QQL, Sector 1-G TXZ. For any information on c.d. work or RACES, contact your Sector Radio Officer. Brantree has a 6-meter frequency for its Gonsets. DWY is EC for Beverly. AHE is endorsed as OES for another year. K6YRK, ex-ITON, writes from California that he is on 10 meters and looking for the gang at 6 p.m. EST. Rockport has its RACES license, reports IRE. CXJ is back on 10 meters. AGR is on a trip to W4-Land. SXD has an inside antenna for 10 meters. TNA is back at school. CMU has the rig on 6 meters. JOW has a small boat. CGU is working on his boat. UKA is going on 6 meters. PIW is back on 10 meters with a vertical antenna. FRZ is teaching boating in Brockton. MJA is studying. NEM is working for Sylvania. NLL is re-

(Continued on page 130)



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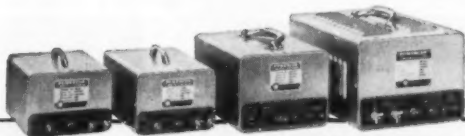
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building. NSH is looking for a 6-ft. dish. LMU is trying pre-amp on 10 meters. NAV has a v.f.o. on 6 meters. AHE, HIX, HLQ/1 and ZAP are in Stowe, and they have RACES with two 6-meter Gonsets. AHE is helping out in the IGY program. The Winthrop group still is holding regular drills with a good turnout. BB and his XYL are going to Europe for 3 weeks. Traffic: (Mar.) WIEMG 291, BPW 266, EPE 254, IBE 195, EAE 97, AVY 84, GNX 59, FJJ 43, BY 32, TY 21, TZ 20, AUQ 14, SMO 12, AHE 11, BGW 9, AKN 8, WU 8, RCQ 7, LM 3. (Feb.) WIHE 28, ATX 13, BGW 11, AHP 3, EAE 3, CZW 2, KLQ 2, NUP 2, IRV 1. (Jan.-Feb.) WIKBS 16.

WESTERN MASSACHUSETTS—SCM, Osborne R. McKerghan, WHRV—SEC: RRR, RM: BVR, PAM: MNG. This section is made up of the following counties: Berkshire, Franklin, Hampden, Hampshire, Worcester. If you live in any of the other 9 counties, you are in the Eastern Mass. section. The WMCW net is doing a fine job on 3560 kc. Mon. through Sat. at 1900 EST. The net needs more representation from the Worcester Area. The West. Mass. Phone Net on 3870 kc. Wed. at 1900 EST is developing into a fine net with very good coverage of the section and a dozen or more stations reporting in each session. Section Net certificates have been awarded to the following c.w. men who have been doing a good job on MMN: DGL, DLS, DZV, FZY, JAH, JDX, KGI, MND and SVC. EC endorsement goes to SPF for the Worcester Area. AJX and DGA have been appointed OO. The Wachinock Radio Club, Box 108, East Templeton, recently was affiliated with ARRL. The Chicopee High School radio class has turned out quite a few Novices, the latest being KN1BKD. Other new Novices are BBC and BBD, brothers in Holyoke, AYK in Cheshire and BGB in Pittsfield. Lanesboro has received RACES approval. LDE made BPL again. PHZ has worked KZ5, KL7 and KPP4 with his mobile rig from the Berkshire Hills. The DX Contest helped AZW to raise his count. He worked total to 112, EOB, RB, WEF, ICW and JYH worked up some good scores in the contest. I hear HDM won first prize with his home-built rig at the Springfield Tech. High School Science Fair. JKD has a new Viking Valiant. NPL has a new rotator for his 10-meter beam. HRV is back on 10-meter mobile after acquiring a Gonset Super Six. ESA, HRV, LJQ, KFO, RFU, STB, WEL, WFL, VNH and several others from the Springfield Area enjoyed the v.h.f. dinner in West Hartford. JYH is keeping skeels with KFF, who recently moved to Florida. DXW has completed a TVI-proof 400-watt final. KN1ABS has a new Globe Scout. BYH has his 6-meter mobile ready to go. FZY is looking some good DX on 20-meter c.w. Hams in the Worcester Area regret the passing of SWL G. Morton Esten of North Grafton who, although not a ham, was an avid listener and performed many services for his ham friends. Traffic: WILDE 805, UKR 192, DLS 160, UEQ 135, BVR 93, FZY 47, DZV 46, AJX 31, TAY 24, DWV 19, JYH 18, HRV 8, DGL 7, AGM 3, KGI 3.

NEW HAMPSHIRE—SCM, John A. Knapp, WIAJ—SEC: BXU, RMs: CRW and COC, PAM: CDX, NHN. Traffic Net is on 3685 kc., Mon. through Sat. at 1900. The Granite State Phone Net meets at 1900 Mon. through Fri. on 3842 kc., with an informal session Sun. at 0900. This net needs regulars in the Laconia, Durham and Nashua Areas. NHEN meeting time is Sun. at 1300 on 3850 kc. The Dover Mike and Key Club's new call is K1BFU, KKT trustee. BYS reports a new tri-band vertical ground-plane antenna for 10, 15 and 20 meters. In the antenna dept.: EVN is sporting a new three-element Gotham beam on 10 meters. New gear dept.: DYE has an electronic keyer. ASZ, U. of N. H., is on the air with an 813 to a Windom antenna. VGX has been appointed chief operator of the Harvard (College) Wireless Club. AF. Welcome home to TNO, back on the air after completing Armed Forces service. Certificates endorsed: VZS, WBM, BYS and HQ as OPSs; DYE, WBM, ARR and ASZ as ORSs; ARR as OO. Welcome to new hams K1s AMM and API and KN1s ANE, ANH, APQ, AYX and BKE. See you on the air on Field Day, gang! Traffic: (Mar.) WIDYE 43, ENM 39, GJM 35, CDX 29, BYS 10, EVN 9. (Feb.) WIDYE 161, FUA 129, FZ 22, EVN 15.

RHODE ISLAND—SCM, Mrs. June R. Burdett, WIVXC—SEC: PAZ, PAM: YNE, RMs: BBN and BTU. New appointees are KDS as ORS and JJW as OPS. UHE is participating in the IGY project. CEW and ZPG have been keeping several Rhode Islanders in contact with their relatives at KC4USN. Our SEC, PAZ, recently attended meetings of the CRA, NCRC and NAARO and is scheduling visits to other clubs. WN1LFX, the jr. operator of WPX and ULS, is studying electronics while stationed in Memphis, Tenn. CCN's daughter is KN1BDS. GR has been successful in working some choice DX on s.s.b. BBN was active in the

(Continued on page 132)

Feature for Feature...

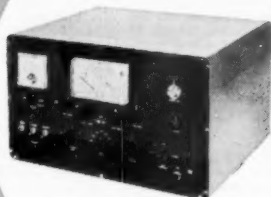
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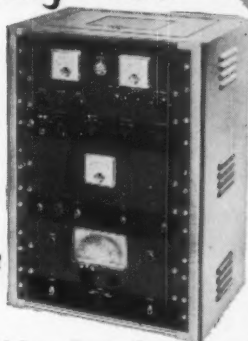
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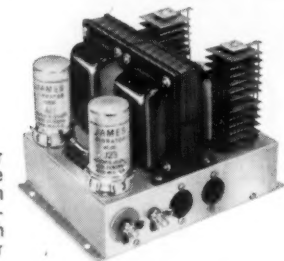
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DX Contest and managed to add some new countries to his postwar list. KDS and FII are building DX-100s. ZXA has a Model 26 on RTTY. KN1AA1 is active on 40- and 15-meter c.w. K1ABR operates a DX-35 on low frequencies and is building an 829B final for his 2-meter rig. Ex-1DHX now is K6YRF and is on 2- and 75-meter mobile. The NAARO held an auction Mar. 29. YNE is on 144 Mc. Traffic: (Mar.) W1VXC 108, BTW 81, YKQ 69, BBN 44, KDS 39, TGD 11, ZXA 11, HLY 10, YRC 6. (Feb.) W1LUO 12.

VERMONT—SCM, Mrs. Ann L. Chandler, W1OAK—SEC: SIO, RM: BNV, PAM: SEO. Traffic nets: VTN, Mon.-Sat. at 6:30 P.M. on 3520 kc.; VTPN, Sun. mornings at 9 on 3860 kc. The GMM, as of Apr. 15, is operating at 1700 on 3860 kc., instead of at 1200. HRG and ZYZ assisted SEO with NCS of VTPN during March. The net welcomed APZ, IVT and WPK as new stations. VTN held 22 sessions in March handling 66 messages. Top QNT stations were JLZ (21) and ELJ (20). Appointments: ZJL as OPS. The Mike and Key Club of Middlebury, ZLH, held a dinner meeting Mar. 5 at the Dog Team to honor KN1BCU, KN1BCZ, KN1BDA and KN1BER as newly-licensed members. Guest speaker was FTF who showed colored slides and spoke on the Vermont State Police communications system. Guests were MMN and OAK. The March meeting of the BARC was held at WCAX-TV studios in Burlington with a feature presentation of live amateur television by W2GJR/V2E from MARC (Montreal). The Burlington High Amateur Radio Club meets each Wed. at 3:30 in the electronics lab. Officers are: CTM, pres.; KN1ASB, vice-pres.; ETV, secy.-treas.; and Dave Steele, Student Council. Club operation is on 10- and 20-meter phone, and 7 members of the 19 are licensed. QCN is heard on 75-meter phone with 7 watts on c.h.! LYD and KN1AEY (XYL) are back from Florida. HGZ, IVT and JXO have dropped the "N." AC drove to Melrose, Mass., to bring his NC-300 back from factory overhaul. RHQ is heard on 75-meter phone. Speedy recovery is wished for GAE, RNA, QXU, EDM and JLZ. Congrats to HYK on a new YL harmonic. ZYZ has p.p. 813s in the new final. BNV has finished his kw. VZE is proud of his new granddaughter. UXS is attending UVM and received a second call, KIATG. The University Club at UVM is on the air with club station MFL. WN1LMI keeps busy on the Novice hands with contacts ending with "UR FIRST VERMONT PSE QSL"! WN1NXB is getting a new slant on electricity from high school physics classes. FN has been operating a Viking Valiant. EIC built a modulator indicator and is making nice contacts on 15 meters. VZE flew to California and visited his daughter and also ex-WINDB. SEO attended the Atlantic Dermatology Conference in Boston and visited ZE in Mattapoisett, EJ and EX in Providence and PO in Hanover, Mass. NLO is looking for QSTs prior to Aug. 1925. Other new Vermont calls are K1s AAW, AKZ, AXO; W1s BYO, OJU and OJZ; Novices KN1s AER, AXY, AJL, APA, ARP, BGC, BIK, BKF and BKK. Traffic: (Mar.) W1JLZ 96, ZYZ 85, OAK 65, AYP 60, BNV 38, BXT 35, KRY 35, ZEW 35, ELJ 29, ZNM 21, KJG 19, VVP 2, ZJL 1. (Feb.) W1VZE 12.

NORTHWESTERN DIVISION

IDAHO—SCM, Rev. Francis A. Peterson, WTRKI—Plan your summer vacation so you can attend the Big Springs Hamfest Aug. 3-4-5. RCV and AOR have new DX-100s. IY and WN7GGV have new DX-35s. VQC reports he enjoys being OBS. IZM washed out the landing gear on his winged mobile. RKI learns fast and removed the mobile before crashing the car. NGU moved to California. JHY is taking on all comers to radio checkers. OA has a 2½-kw. generator now for emergency power. IFML/7 is now 10-meter mobile in Pocatello. BQY has gone in to the Armed Services. The Pocatello Amateur Radio Club has a mountain top picked for Field Day and a 3-kw. generator ready. QIS and CKX are starting on 2 meters. AGO moved to Seattle and is "donating his time" to Boings. Spring fever must have hit most of my news reporters. We need more QOs to help the Novices. The FCC does. Apply with your news. Traffic: W7VQC 37, IY 16.

MONTANA—SCM, Vernon L. Phillips, WNPV/WX1—SEC: KUH. New officers of the Old Faithful Radio Club are YPN, pres.; LPL, vice-pres.; Pete Langsdorf, act. mgr.; and RZY, secy.-treas. The Helgate Radio Club is affiliated with RACES. Fifteen of the 19 students of the Helgate Radio Club's radio classes passed the FCC exam and are awaiting their licenses. YXC and four mobiles participated in the Great Falls Red Cross Mop-up Campaign. HBT is conducting code and theory classes in Laurel. PXR moved from Billings to New Mexico. UOU moved from Billings to New York. YCQ moved from Havre to Kalispell. SYVA moved from Oklahoma to Harlowton. WN7DXM received her

(Continued on page 134)

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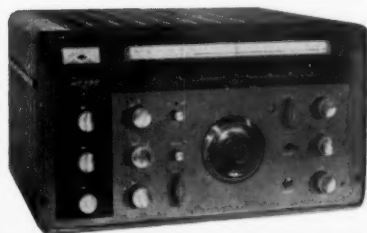
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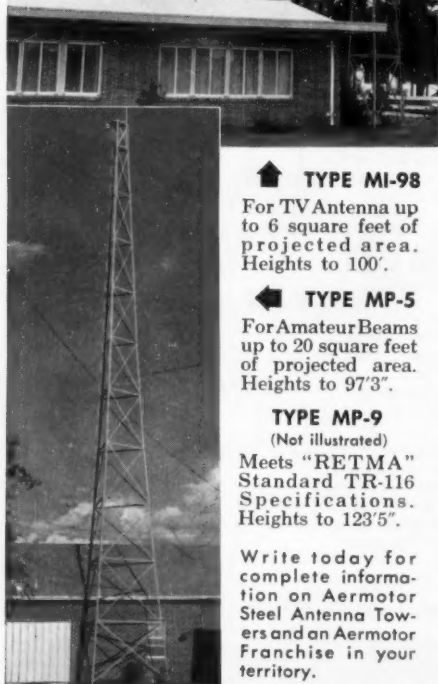
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WAS certificate. COH and his XYL returned from a Florida vacation. LBK's family had the mumps. New gear: AYG has a G-66 and a G-77 mobile; CRC has a 15-meter beam; HIW has a 20-watt for 20 and 40 meters; TQC has a tower and is getting a tri-band beam. Recent appointments: PYZ and TGU as Emergency Coordinators. Traffic: (Mar.) W7SFK 44, YPN 16, OIP 15, TNJ 11, TYN 11, OOG 10, TPE 8, EEO 7, MQI 7, NPV 6, WVF 6, YUB 6, SMY 5, ARJ 4, RLX 4, YQZ 4, FUB 3, ZUK 3, LBK 2. (Feb.) W7FIS 2.

OREGON—SCM, Edward F. Conyngham, W7ESJ—OMO reports progress in electing a new net manager for OSN. QWE reported the OARS Net, YVE, had 635 check-ins, 10 messages handled, 128 contacts, 12 bulletin readings and 84 different stations involved. The most active NCs were RXO and PLJ. ABJ is working nights and having trouble meeting OSN and MARS schedules. JCJ is QRL printing a new *Oregon Amateur Radio Call Book*, which will be available very soon. DEM is a new reporter, being ex-6GFK. ZBO, using a Globe Scout and an 8-35, has been on OSN, OEN, RN7 and MARS regularly. TAZ has dropped his OO activity because of his health, and is looking for a new QTH. KTG is working 2 meters nearly every day. TLC is working hard on AREC jobs around Corvallis. DSK loaned out his NC-300 receiver while he was in California. NGW has been keeping the equipment going at Snow Bunny Lodge, Mt. Hood, for next Field Day and also keeps 2 meters hot. FBW prints a news sheet for the PARC members, and keeps the big gear going on the USS *Pargo*, too. SDW advises that he is snowed under with work keeping up two places. SEZ is working up a conversion article on the ARC-4 transmitter. YUY has a new HQ-140XA receiver. ZHF, while new on the ham bands, is an old arc and spark operator from the 1920 Navy. SMR is rebuilding a Bendix TA-12C. LT is handling traffic and is on MARS. WHE is active in MARS and working out his modified GP7 rig. VLE had a vacation. QFY last reported in to VLE from North Borneo, en route home from Brisbane (VK-Land). RET is doing QYS's MARS work, and establishing a 2-meter NG net in the State. Traffic: (Mar.) W7APF 554, LT 93, OMO 54, BVH 40, HJU 34, QYS 20, ZBO 20, DEM 12, QWE 11, KTG 4, JCJ 2, ABJ 1. (Feb.) W7APF 395, QWE 11, KTG 4. (Jan.) W7APF 575.

WASHINGTON—SCM, Victor S. Gish, W7FLX—The Auto License Plate Bill was signed by the Governor Mar. 14. PUA is working on 1290-ke. and 432-Mc. gear. JC has QSOed 112 countries in addition to his nightly traffic work. HDT reports much activity in Clarkston on 220 Mc. The club is looking forward to a visit from Division Director CPY. LVB has a DX-35 and a Heathkit VFO on the air now. OE is in W6-Land for a few months. GVV and BXH renewed ORS appointments. AMC is bewailing the fact that spring outside work is interfering with hamming. EHH expects to spend a lot of time at the lakes this summer. ER reports the Quarter Century Wireless Association Nets meet on Sun., c.w. on 7125 ke. at 1500 PST, phone on 3950 ke. at 1600 PST. AIB still is looking for sources of power-line noise. The McChord AFB Radio Club's new licensees are HNO, HNQ, HNT and HSX. #YGB has been assigned to K7FAE. K7BFB also is at McChord AFB. AVM has little time for hamming—a little 6-meter work and one test drill during March. USO is trying out a 20-meter bantam beam. PGY is monitoring 3920 ke. until 1900 PST each evening for traffic and is working on a new s.s.b. rig. K7FEA reports a new vertical ground-plane 90 feet high. CWN got two Russian QSL cards and had to take them to a friend to have them read. PXA reports the Valiant is being de-bugged and he is converting an ARC-5 for 160 meters. BXH sold his Adventurer-Heathkit VFO combination to ZIZ and now is using a 6146 90-watt traffic rig with 100 per cent QSK. Traffic: (Mar.) K7FEA 2092, W7BA 1186, PGY 689, VAZ 624, K7FAE 630, WAT 560, W7FRU 156, K7FBN 151, W7APS 93, JC 73, WQD 66, AIB 62, EHH 53, ER 38, AMC 37, USO 23, BXH 20, JEY 20, GVV 13, TH 8, OE 7, HDT 6, LVB 6. (Feb.) W7GVV 11.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—Travel notes: KH6AXQ has returned to his home and shack in Hilo after months in Honolulu. EJ left for a two-month trip to the Mainland. W2DR, W6FDJ (SCM East Bay section) and W6SUE visited the Islands in time to attend the Sideband Dinner. Old-timer CI is back on the air after years of silence. He can be heard on 2 meters now. AGH has a new crank-up tower for the all-hand beam. AED has a weekly sked with K6HA in Santa Rosa on the Civil Defense Net. C.w. now, R7TY soon. Traffic: (Mar.) KH6BQS 273, KP6AK 125. (Feb.) KH6BQS 333, KP6AK 101.

(Continued on page 136)

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NEVADA—SCM, Albert R. Chin, W7JLV—SEC: JU, ORS: VIU and YNO. PC and JLV attended the Pacific Division Director's meeting at San Jose Mar. 30. VIU and YNO report SHY, ex-KL7BEA, now in Winnemucca, expects to return to KL7-Land. New hams in Winnemucca are HBW and HOP, ex-6ABE. YNO picked up 10 new DX countries to VIU's 2. Frank Johnson, of the Nevada State Journal, gave the Reno gang an FB spread on their hidden transmitter hunts. Competition really is getting keen with the transmitter harder to find each time out. MAH did an FB job at the fire station with only four reporting in, with TQE the winner. TQE hid his virtually over our heads on his time out. Please, no Helicopters! WANS certificates No. 42 and No. 43 went to RBV and TQE. Newcomers to Southern Nevada are BDB, RDE, 4ZUJ7, WN7GZT and WN7HAG. YLO will fill in for VYC in the RACES program for Southern Nevada.

SANTA CLARA VALLEY—SCM, G. Donald Eberlein, W6YHM—Asst. SCM: Roy E. Pinkham, 6BPT. SEC: NVO. RM: ZRJ. PAMs: OFJ and WGO. The following appointments have been endorsed: EXX, OFJ, OIA, QEL, VQR as ECs, ZRJ as ORS, Richard Ogg, EPJ, captain of the PAA Clipper *Sovereign of the Skies*, gave a talk on his experiences during ditching operations in the Pacific last October at the West Valley RC meeting. K6MPN is the new editor of *PAARA-GRAPHS*. RLB gave a talk and ran slides showing activity during past Field Days before the PAARA. QYU has received the grade of B1 in the IRE. K6IEE is trying to get the Redwood City Council interested in the county c.d. A new v.h.f. club is being formed in the San Mateo Area. If interested, contact BDO. GJZ has been skedding WEL/5 Wed. afternoons. UZV was first in the Salinas Area to try DSD. ZTX was active in the DX Contest. K6DYX expects to be operating /8 during June and July. PLG will take NCS Thurs. on PAN. YBV reports that whenever the P. O. Dept. finds a QSL with a last address in Los Gatos it is left in his P. O. Box. K6QCI built a mobile 6-watter, converter and whip antenna. Hal is doing liaison from NCN to RN6 one night a week. K6BBD informs us that station UW is open at the San Jose Red Cross Chapter House on Thurs. evenings and visitors are welcome. WNI has the exciter on the air at last. HC attended a meeting of hams in Irvington and helped with the forming of a new club for that area. YHM gave a talk on traffic before the West Valley Radio Club. Any ham interested in getting into the traffic phase of amateur radio will find a spot for his services regardless of his code speed, so contact your SCM. Traffic: (Mar.) K6-DYX 424, W6BPT 340, JCG 196, K6CGA 193, W6PLG 161, YHM 147, YBV 137, K6GID 107, GZ 103, W6OFJ 72, BMP 60, ZLO 56, AIT 40, OII 39, K6DHO 30, QCI 30, WFOF 18, HC 10, K6BBD 6. (Feb.) W6BPT 49.

EAST BAY—SCM, Roger L. Wixson, W6FDJ—Aboard the USS Nickel DE-587, 26 Deg. North Lat. 143 Deg. West Long.: en route to Pearl Harbor, T. H. SUE and FDJ are making their annual USNR cruise to Hawaii so thought it would be somewhat novel to write the SCM column from aboard ship. Once again I had the pleasure of visiting ARRL Headquarters in Hartford. While on a recent business trip I attended the IRE Show in New York and took the opportunity to go to Hartford and do a story on League operations. I hope to get around to the clubs and show the color slides and let you in on work that is being done on our behalf. As per usual Ed Handy acted as host and introduced me to every activity in the League. Around the East Bay section: CAN writes that he intends to continue with the job of SEC as the transfer he expected didn't pan out. The Mt. Diablo Club was honored by John Reinartz, who gave his talk on Antenna Measurements. I had the opportunity of hearing the talk at the Richmond Club recently and it is really worth while. K6IGJ and his son 6QCN are operating KA2CU these days. They are on 10 and 20 meters and can be found in the DX portion of the bands around 2 to 3 and 6 to 7 p.m. PST KNRUF recently took his General Class exam and came through with flying colors. Good work. FIR for the wonderful job your club is doing in putting out the *Carrier*. The East Bay Club officers for '37 are EDN, pres.; VSV, vice-pres.; K6MGM, sec.; K6PNC, treas.; NBS, OJT and MXQ, directors; ERR, club station; EYJ, CCRC; and K6KWP, TVI. The Sky Riders have a new crew with JOP, pres.; QJD, vice-pres.; TLM, sec.; ELP, treas.; ANK, net control. For those wishing to join the Sky Riders Net can be found on 28.56 Mc. at 8 p.m. on Wed. The next meeting will be held at 1230-147th Ave. in San Leandro. V.h.f. activities (SUE reporting): VSV can be found busily turning out 432-Mc. tuned cavities. During the week 432-Mc. activity can be heard at 7:30 p.m. and on week ends at 10:00 a.m. DX, or at least an added incentive, is OJB, located in Orangevale in the Sacramento Valley, who is quite active on 432 Mc. Most of the gang are using the "Melvin

(Continued on page 138)

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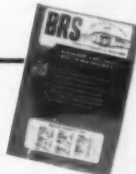
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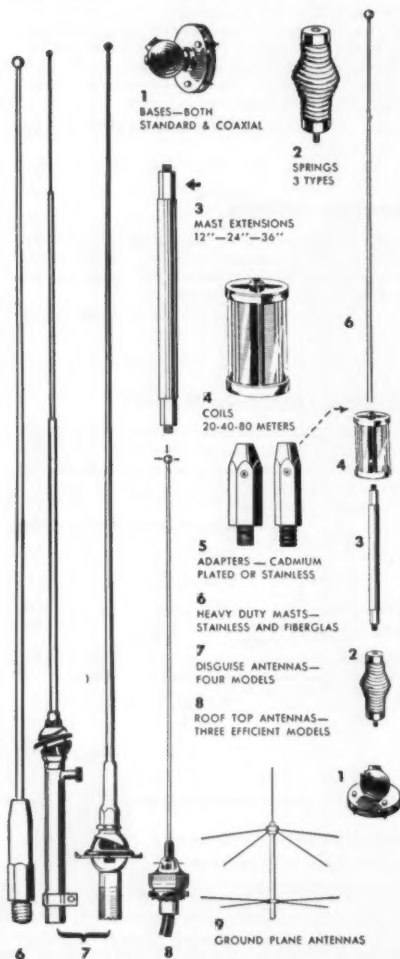


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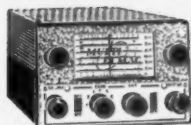
50 Watter" crystal-controlled converters using a 416B r.f. and a trough-line tuner along with a 6U8/6AK5. Invection chain using 70-Mc. rocks seems to be all the rage. Six-meter activity is headed up by weekly skeeds with Colorado using scatter propagation. SUE is currently designing and building a twenty-element broadband stacked array. K6LNU is keeping cross-band skeeds with VK2AB on 6 and 10 meters. The Bay Area 6-meter gang is keeping the first 50 kc. of the band open for DX listening and is using the higher frequencies for ragchewing. PNC is getting his 432-Mc. equipment ready. Please send me some news of your activities. I will bring back some movies and slides of Hawaii and a report of activities. I have been receiving RTTY signals all the way over. So far I have copied VPC DOU, NKP, ASJ, VVF, PLW, PHS and YMK. Copy has been good.

SAN FRANCISCO—SCM, Walter A. Buckley, W6GGC—The HAMS held its regular monthly meeting in the local Red Cross Bldg. and spent the evening making arrangements for Field Day. A family picnic was planned in conjunction with Field Day. The 29ers Club had a large turnout for the March 10-meter hunt. The 10-meter hunt is held the 1st Thurs. night of each month and the 6-meter club has its hunt on the 1st Fri. All interested are invited to join the fellows. The starting point is Twin Peaks at 8 P.M. About one hundred showed up for the 6-meter monthly luncheon in March. The San Francisco Radio Club held its annual auction Mar. 27 with a big turnout. The Cathay Radio Club has been turning out quite a few Tech. and Novice Class licensees through its classes which are held every week at the American Legion Hall in Chinatown. JWF and GGC have been taking in the Tamalpais Radio Club meetings. The Marin Amateur Radio Club has a real nice meeting hall now in the Red Cross Bldg. in San Rafael and has its rigs set up ready for any emergency. EQQ is back in Eureka again and SLX is stationed at Treasure Island for E.T. school. KZF, Bill Ray, accepted the post as area Section Emergency Coordinator for the San Francisco Area in time to put in some time for recent earthquake emergency traffic. As usual, CXO, with Frank Johnson at the rig, was right on the job at the Red Cross National Headquarters in San Francisco. People in this city have had more than their share of earthquakes lately and still are getting an average of one or two shakes per day as "after shocks" at this writing. Telephone service was out for couple of hours the day of the "main shakes" so local amateurs were busy assuring out-of-town contacts that San Francisco was badly shaken but not destroyed as rumors were quick to travel and out-of-town relatives were unable to check because of long-distance telephone jams. JDN had this station check with one of the local schools on the welfare of a "boarder-student" on Saturday night because mother had been unable to get a phone call into San Francisco all day and Saturday night. As the earthquake was Friday noon you can readily see how lines were tied up. One thing the earthquake did was to prove to the "city fathers" that telephone communications here are far from perfect. WJF has the 10-15-20-meter beam almost ready for action at his new QTH. CBE is trying to get a Delaware contact, and says he's been trying for the past 26 years. Listen in, Delaware, please. GQA is very happy with his "new second-hand 32V" (as he puts it in SAR). QMO now is liaison to RN6 Wed. nights and also is checking in on the Mission Trail Net and McAn 7. FEA reports a lack of hamming because of getting the new QTH in order and resting up after the recent move. The Central California Council meeting was held in Richmond April 3. I met quite a few of the ARRL officials at the Director's meeting in San Jose. Traffic: W6GQY 561, QMO 333, K6HWI 94, W6GGC 48, GCV 11, PCN 2, WJF 2.

SACRAMENTO VALLEY—SCM, LeVaughn Shipley, K6CFF—SEC: JEQ I have been visiting various clubs in the section, outlining the organization of our section and speaking in behalf of ARRL. If I have not yet visited your club please bear with me; the section is 300 miles long and it takes time. In the meanwhile please let me know if I can be of assistance. My apologies to the new YL club in Sacramento for not giving them recognition last month. They are known as the Camellia Capital Chirps. The news I promised on our traffic nets is not very encouraging. I received only one traffic report this month and that was from a fellow who no longer is a League member. Although we are trying to revive it, the Central Valley Net (CVN) is no more. We need traffic men in every part of the section. Most appointments are available. Some have let their ARRL membership expire, which automatically cancels their appointments. Others have failed to have their certificates endorsed. Some new appointments have been made but more are needed. Remember, you must be a League member to qualify for official appointments. We need a new EC for Chico. How about it, fellows? Our old friend, K6FR, after many years still is doing an FB

(Continued on page 149)

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**Elmac Model PMR-7
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160 thru 10 meters, plus BC band. Dual conversion. 10 tubes. Less power supply and speaker.

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The
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public relations job on the TVI committee in Sacramento. All clubs and individuals are urged to submit monthly activities reports to the SCM before the 4th of each month.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, WA9PU—The Turlock Amateur Radio Club has been very active. The club put on an impressive demonstration of amateur radio communications at the Scout Rendezvous and also put on a real demonstration before the Turlock Exchange Club. KN6UHP was program chairman and was assisted by GYN and KN6SNA. PSQ is heard on 2 meters. K6ITM worked 48 states on 80 meters for the 21st WAS. JFS is signing a bit; he got rid of TVI. K6GTI is back on 75-meter mobile with an Elmac. ONK is active on 10, 15 and 20 meters. FSD has moved and has retired to Santa Cruz. BJI has a new QTH and is active on 6 meters. LOS has a 10-meter beam. PPO is heard on 2 meters with a Communicator. K6KLL is on 6 meters with a Communicator. SUV has a new SX-100 and likes it fine. WPV has a new HT-32. There is a 2-meter Novice net in Tulare County. KN6YDW is N.C. at 9:30 a.m. Sun. ZKH is working on a 20-meter rig using an 813. KN6YDW is on 40 meters with 60 watts. KN6VSK is on 40 meters with a Viking II. K6KOL has a 38-ft. tower with a 15-meter beam. RTL spends his week ends working on a DX-35. OSM is mobile on 75 meters. DBH is active on 2, 10 and 75 meters. The Stockton Radio Club is going to use the C.O.P. Stadium for its Field Day site. ILH has a Gonset 66 and 77. DVI is using his Viking as a linear on s.s.b. YEX is on 20-meter phone again. Thanks for the news; keep it rolling. Traffic: W6ADB 154, OUX 15, EBL 6.

ROANOKE DIVISION

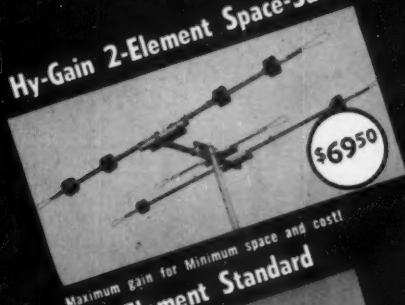
NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: ZG. PAM: DRC. We are very pleased to announce that enough RACES plans have been filed in the State to say we very definitely have RACES in North Carolina. Sure, we want every amateur who desires to do so to become affiliated with the RACES program. This matter is left open to the individual. At the moment some 14 county plans have been filed and about 26 plans are in the process. If you desire further information, please write me your needs. The Command and Information Net, composed of the Official ARRL field forces, is being activated on 3997 kc. The informal business net will be held each Thurs. at 7:00 p.m. All ARRL Districts headed by the EC except two have AREC nets that meet at least once each week. At the present time we have 525 AREC members and the number is increasing all the time, thanks to the very efficient ECs in the State. The Winston-Salem Amateur Radio Club is considering a State Hamfest sometime in late May or early June. The Greensboro Club is cooperating. We very definitely need such a meeting. ZWF has a new 300-watt transmitter. K4AI is on the air. HKB has received the WAS certificate. K4EX and K4KBA have dropped the "N" from their calls. K4BVQ has DXCC and K4DRV has 90 countries to his credit. HUW is NCS for the THN for the next three months. The THN Net now has 106 members. TJA is the new net secretary. SGD was awarded the Certificate of Merit for her work as net secretary for over 5 years.

SOUTH CAROLINA—SCM, Bryson L. McGraw, W4HMG—Congrats to ZRH on the new Jr. operator, AVU, with a new NC-300 plus a modified DX-100, is going great on 20 meters. K4ETB, new president of the Edisto Radio Club, is believed to be the first YL/XYL president in S. C. Thanks to Anna, GLV, for the fine reports on the club. GLT, now in St. George, has an FB signal on all bands. K4HUB dropped the "N" and is on 75-meter phone. K4GIF and the fine Shaw-Sumter Club had 2AAW/4 winning its WAS Contest with 46 confirmed. CJD was a close second. 2KGQ has left for Japan. EJR is running a Ranger and getting the good ones around 14,070 kc. GCB now has 92 confirmed toward DXCC. K4MTF is on in Dalzell with a fine signal via a DX-100. Congrats to K4GIE on his fine consistent efforts with the club bulletin. There is much excitement about the coming hidden transmitter hunt for the entire State. The Palmetto Club is vowing to hand some other club the Corn-Cob Trophy. HCD is proud of the new Viking. EAR is busting speaker cones with a new 500-watt. K4AI has been appointed Asst. C.D. Radio Officer to coordinate with ZRH. The Palmetto Amateur Radio Club RACES plan is in for approval, and Columbia will be NCS for RACES (State Net), Aiken and Charleston RACES approval is expected at any moment. SOF, our SEC, is very active in AREC and also is giving a big hand with RACES. K4GHT is the proud owner of the famous 6AQ5 final rig and doing a good job with the 3-watt via 75-meter phone and 80-meter c.w. Glad to have WA back after too long an absence. The XYL of FFH is recovering after a serious illness. Do your part, join the ARRL,

(Continued on page 142)

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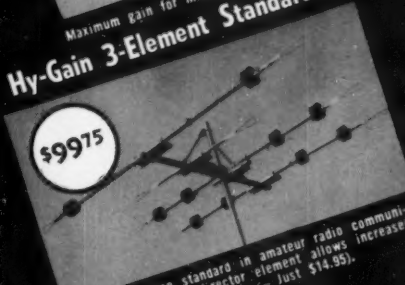
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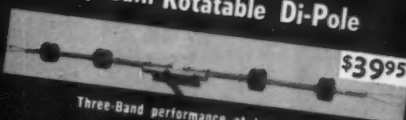


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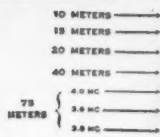
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now! Traffic: (Mar.) K4BVX 243, W4AKC 105, K4JFN 94, W4CHD 36, NTO 18, K4DFW 17, GLT 16, W4YAA 15. (Feb.) W4AKC 122.

VIRGINIA—SCM: John Carl Morgan, W4KX—SEC: PAK. (Rt. 1, Box 7-H, Fentress, Va.) AREC activity is picking up. PAK reports Virginia participation in the South Atlantic "Weather Net." The Richmond Club's VA-JF certificates are going apace, with PJ2AF being the first foreign recipient. The South Boston Club now has quarters and the rig in the Municipal Bldg. and has applied for a call. K4IEAQ proves hamming and studies are not incompatible by becoming salutariorian of his high school graduation class. K4E2L is the new mgr. of ESN. Doug, together with 200G, plans to attend the National Boy Scout Jamboree with a ham rig. Welcome to K4OQR, ex-K4AZJ. K4DKA moved again. AAD also is in a new QTH and reports that MT is moving to Smithfield, ZM retired from the USCG, and says the new job with RETMA minus traffic net activity. K4ELG bemoans being "stuck" at 40 states in quest of WAS. WBC reports the new 10- and 15-meter beams paid off in the DX Contest. BJJ succumbed to a.s.b., while FLX is setting up an a.s.b. rig. JUJ racked up the top phone score in the 4th call area in the YL-OM Party. KN2MJO, new on the air with 10 watts in Falls Church, reports his first piece of traffic! With K4LMB in the forefront, Arlington hams seem to be breaking up the log-jam over the ham antenna law in Arlington. Old 2CI, now in Alexandria, would like to hear from operators who worked with him as a ham operator and in the US Navy 1920 to 1922. Following announcement of the regular Va. QSO Party, many individuals suggested we have another one—an interstate one to give Virginians a better chance at WAS, and give out-of-staters a better opportunity to qualify for the VA-JF Award. Such an activity now is tentatively planned for September. Details will be forthcoming. Traffic: (Mar.) W4QDY 331, 1A 329, K4DKA 225, EZL 154, KNP 106, W4MWH 92, FLX 84, K4AET 77, W4ZM 52, KX 50, K4ELG 47, W4AAD 23, K4JLO 15, W4JUI 14, LW 12, K4BFW 11, DBC 9, W4PVA 9, K4IKF 5, BVS 4, W4VMC 4, K4BUI 3, K4AJMO 2. (Feb.) K4KNP 48.

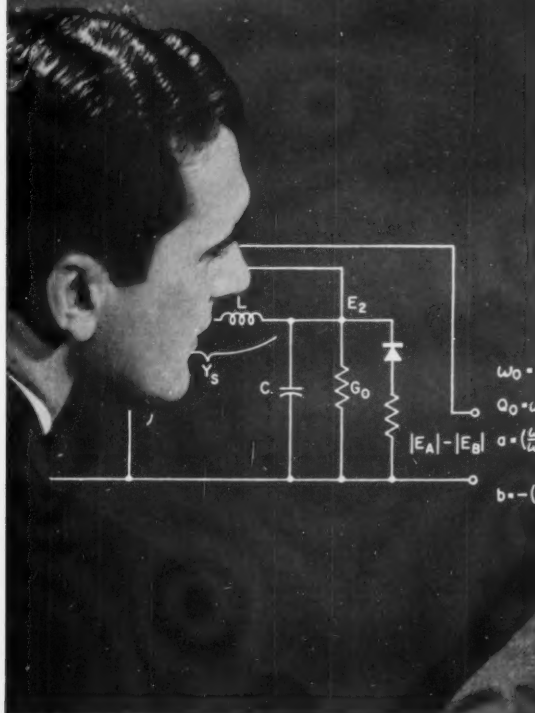
WEST VIRGINIA—SCM, Albert H. Hix, jr., W8PQQ—Asst. SCM: Festus R. Greathouse, 8PZT. SEC: GEP. PAM: FGL. RMs: DFC, GBF, HZA and PBO. It gives me great pleasure to announce that PZT is now Asst. SCM for this section. Feel free to discuss any section matters with Fes. West Virginia was well represented at the Dayton Hamvention. The XYL of VOI, K8ARA, walked off with the GPR-90 communications receiver as one of the main prizes at the Hamvention. A new Novice in Fairmont is YL WN8ELG. JM is getting the bug again. KN8BIT has been working lots of DX on 15 meters. DEY is very active on WYN. K8AGA has a new BC-348 and will be on 20-meter c.w. soon. A new ham in Elkins is 3GWN/8. CSG is a new OO. He is well toward WAS and is working lots of DX. AVW, CHP and QWM are working 20 meters a lot. IHN is raising his DX total at a rapid rate. QIV also is doing a good DX job. Ex-VCT, now K6TEO, visited hams in Charleston recently. VMP has a Johnson 500-watt rig on order. KN8DZU is a new ham in South Charleston. MLX and ZJS are building new tri-band beams. We are sure sorry that the Governor vetoed the License Plate Bill. GBF, PBO and BWK received 8RN certificates. The Morgantown Club continues to hold meetings at the new club house. DDB is building a new vertical for 40 and will be on 75 meters soon. Traffic: W8PBO 145, BWK 63, HZA 44, KXD 33, SNP 30, GBF 28, CCR 22, PZT 20, NYH 13, GIU 5, K8CSG 3, W8PQQ 2.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, B. Eugene Spoonemore, W8DML—SEC: NIT. RM: KQD. PAM: IUF. Congratulations to K8ECN, who did a swell job as Acting SCM. We hope to carry on the work equally as efficient as Bill. At last the Call Letter License Plate Bill passed; only the untiring efforts of nearly all the twelve hundred amateurs in Colorado made this possible. Special thanks go to the Denver group, who sponsored the move with the able assistance of K8EBV, W8VYP, RX, BWJ, KVD, NIT, INT, PGX, KGD, OMN, YMP, TGD, NVX, GDC, IA, NVU, DXF, SUP, AEE, PGN, TX, OYG, BON, COC, TV, HGT and a host of others, including our sponsors in the Senate and House, Andy Kelly of Denver, Cheever of Colorado Springs, Johnson of Pueblo and many, many others. Now it behooves each and every one of us who display the call letter license plates to make a special effort to conduct ourselves in such a manner as to bring our fraternity the high esteem for which we are all striving. On Mar. 22 we had a terrific blizzard in Eastern Colorado and Western Kansas. On Apr. 2 the same thing happened on the eastern slope of the Rockies, centered in the

(Continued on page 144)

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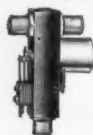
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teur radio again came through, furnishing the only
communications in a number of cases. K8EDF/0, W6-
CVG, TV, NIT, BWJ and many others performed out-
standing work on this. Remember Estes Park June
15-16. Traffic: W8IA 375, KQD 355, K8DXF 192, W8TVI
132, K8DCC 67.

UTAH—SCM, James L. Dixon, W7LQE—VHS, QDJ,
DUK, CVX, SAZ, ABL, ELF, CWD, CWF, YDZ, RQJ,
and LRP, as members of the Ogden Club, operated
Mar. 29, 30 and 31 to furnish radio communications to
report the progress of contestants in the National Col-
legiate Athletic Annual Ski Meet at Snow Basin Resort.
27 and 50.4 Mc. were used, with a 2-meter link to Ogden
for the press and broadcast station through GPN. OSV
is working 10 and 2 meters and has a new mobile on 10
meters. CCP has joined the Colorado Slow Speed Net.
PKB is using a Viking 1, a Viking VFO and a Win-
dom. ZJI loaned a 6-meter Communicator to RNW to
use from his hospital bed. VHS is trying out grounded-
grid p.p. 807s on 6 meters. OXC has a new 25-w.p.m.
certificate from MARS. WNTHEX (a 13-year-old-YL)
worked 26 states in the Novice Roundup and is the jr.
operator of POU. NIA has a new Morrow mobile instal-
lation with a master mobile whip. FYC is using a
TBS-30, an NC-300 and a four-element beam on 6
meters. Traffic: W7CCP 5.

WYOMING—SCM, James A. Masterson, W7PSO—
The Pony Express Net meets Sun. at 0830 on 3920 kc.,
PSO and MWS alternating as NCS. The YO C.W. Net
meets on Mon., Wed. and Fri. at 1830 on 3610 kc.,
BHH, DXV and NMW alternating as NCS. IDO/ACG
and CQL participated in the emergency caused by the
heavy spring snows in Eastern Colorado. BXS and
TQO have new beams. 01KE/7 is now in Casper. KFY
has moved to California. UFB is now mobile on 6
meters. The Central Wyoming gang is reading up on
TVI as Casper's first TV station starts programming.
UZR is now s.s.b. Activity is increasing on the YO
Net but more check-ins still are needed. There will be
no organized Wyoming Hamfest this summer. Neither
Sheridan nor Casper, which have sponsored the hamfest
the past three years, feel they can handle it this year.
No other group will assume the responsibility. Traffic:
W7DXV 130, BHH 62, NMW 5, PSO 4.

SOUTHEASTERN DIVISION

ALABAMA—SCM, Joe A. Shannon, W4M1—K4DDC
was elected outstanding NCS for AENP for the first
quarter of '57. Newcomers: Fairfax, K4KZQ, Tuscaloosa
KN4OQQ, Huntsville K4OCV. The Tri-Cities Club is
busy with code classes once per week, with YRO and
MEM doing the brass-pounding. The Mobile Club is
pushing 2 meters for local work and 4 members now
have rigs on that band. The Gadsden Club, working
with K4BTO (EC), has perfected a local emergency
set-up tying in AREG with RACES. DDT is settled in
Mobile and kicking up a large fuss with the gallon.
WHW reports a new code class in Mobile with room for
fifteen students. RLG is meeting Dragnet. K4EOG was
elected new net manager for AENT, our section teen-age
net, with K4HMI as activities manager. ZSQ is outfit-
ting the shack with new furniture. K4CXC has 58 coun-
ters with his fifty watter, and HON finally removed
the bugs from the Ranger. WAZ needs more material
for the Section Bulletin so clubs and individuals should
take advantage of the opportunity to publicize activities
through the bulletin. It needs your support. YFN is
new manager for the Tenn. Valley 6-Meter Emergency
Net. Traffic: (Mar.) W4RLG 364, K4AOZ 173, W4KIX
136, K4EOG 120, ANB 83, W4ZSQ 43, K4EOH 40, BFL
39, WAYRO 38, CU 37, K4CXC 37, W4HON 35, K4AJG
31, BBS 31, W4WAZ 28, K4DDC 14, W4M1 13,
DEQ 12, RTQ 12, WHW 9, ZSH 9, K4AAQ 8, W4HFE
8, WJE 5, CRY 4, DGH 4, K4KJD 3, W4TKL 2, USM
2. (Feb.) W4EJZ 32, DEQ 8, K4AAQ 3.

EASTERN FLORIDA—SCM, John F. Porter, W4GJG
—SEC: IYT, RM: LAP, PAMs: TAS and JQ. Section
Nets: FPTN, 3945 kc. 0700 Mon. through Sat.; FMTN,
7225 kc. 12 noon Mon. through Sat.; IFTN, 3945 kc.
1700 Mon. through Sat.; FN, 3075 kc. 1900 Mon. through
Sat. Join the net of your choice as there is a place for
everyone. We are sorry to report the sudden passing of
LEP, Tampa. New hams are KN4OEP, OJD, OII, OET
and OES. K4CXW has two new power units for emer-
gency use. BWR reports Satellite, AREG and C.D. Nets
are holding weekly drills. DUG cleared 4211 messages
from the Tampa Fair. IWM suffered a second heart
attack. Drop him a card. DQA is now on Swan Island
with CAA. LZL has a new DX-100 on 10-meter phone.
PZT snagged JA8AE on 7005 kc. 3CUL/4 is QH.
Florida traffic nets. BJI reports 75 students signed for
code classes in Lakeland. K4HNC is Asst. EC in Polk
County. K4BNE and the Florida Midday Traffic Net
helped track down a missing beauty queen. She had
(Continued on page 148)



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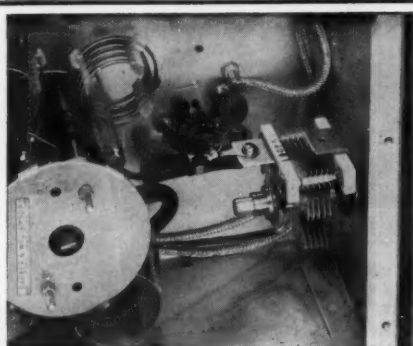


Fig. 6-96

This close-up photo of a grid circuit is from the description of a 1-kilowatt final appearing in the transmitter section of the 1957 Radio Amateur's Handbook. Whether you're seeking information on a 10-watt rig or one capable of running the legal limit, you'll find it in the Handbook: 756 pages, plus hundreds of photos, diagrams, tables and drawings.

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upped and eloped. The DBARA handled traffic at its City Hobby Show. Cocoa: K6HWW/4 is a new OBS and OPS. Welcome to K4MDX, ex-JA2CR; K4Q08, ex-W5YQP; and K4OBP, ex-W3OQL. HCG is the new ed. RO for Brevard. K4BNL is NCS for the C.D. Net. BJP is operating from a new QTH with a vertical and homebrewed 6146 rig. K4GCC has a new Valiant. K4IMM is back on the air after a long illness. The PAFB MARS Club is growing like a weed and meets the 2nd and 4th Tue. at 7:30 p.m. Officers are K4OMM, pres.; K4BND, vice-pres.; YQC, secy.-treas. BWR is a new Asst. Director. Dade: K4CEI is rebuilding the shack. ZXL/ZXK have new 822s. K4DAS has a new DX-100. K4KKG has a new Globe Scout. The Flamingo and Dade Emergency Nets now operate on 145.260 Mc. Traffic: (Mar.) W4DFU 795, FPC 312, EHW 214, PZT 211, K4KDN 200, W41YT 151, K4BNE 139, W4DVR 139, K4ENW 122, W4LAP 117, TAS 115, WS 107, W3CUL/4 98, W4BNM 92, ZIR 78, AHZ 67, K4ABV 57, W4DTV 51, K6HWW/4 46, W4DUE 45, LMT 41, K4AEE 33, AHW 28, W4BKC 22, TRN 20, HCQ 15, RWM 11, K4CXW 9, W4BWR 8, K4MTP 8, W4AZK 7, BJI 7, K4DRO 7. (Feb.) W4YET 30.

WESTERN FLORIDA—SCM, Edward J. Collins, W4MS/RE—SEC: HIZ, EC: MFY. RMs: ANP Escambia, BVE Okaloosa. WKQ ran up 33,300 points in the DX Contest. K4HYL has a new DX-100. K4LQC has a new NC-300. K4RDL is giving the s.s.b. gang a run for their money. WKO, KWM and RKH are away from the section on business. UXW and MTZ are looking for 2-meter contacts. ZYL and CSS represent Ft. Walton on 6 meters. MFY now has a 12-volt system. Plans for forming a new club in the Ft. Walton Area are underway. There are 115 licensees in the Eglin Field-Ft. Walton Area. UXW and MTZ did an FB job covering a Sports Car Race for the Eglin Field group. The EARS group is getting ready for Field Day. PQW pushes the hidden transmitter hunts in the Pensacola Area. GMS is handling lots of phone patches from K4-Land. PAA is busy fighting TVI and CQing DX. ANP keeps traveling around the area. K4KIF has a new HQ-150 and is busy on 6 meters. K4IYQ has a new four-element beam on a tower for 6 meters. K4AGM has three countries and 25 states on 6 meters. K4IVD now has the audio up. The Pensy gang meets Mon. at 8 p.m. CST on 50.7 Mc. UUF has about deserted 2 for 6 meters. UCY was heard on 6 meters. CCY is QRT. WOK is studying DX-100 ads. K4EHI has ordered a DX-35 for 6-meter work. MS is hunting 6-meter openings. ODO has a new B&W 5100. EQR keeps improving the 6-meter rig. HBK still knocks off the DX but is building a big final. CDE has the big signal on 75 meters. K4DDD is QRL work. VR is loyal to 7 Mc. MUX is helping beginners. K4RCY is planning more power. The Radio Club at Sauley Field is being revived by OKB.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. GCEN meets on 3995 kc. at 1830 EST on Tue. and Thurs. 0800 EST on Sun.; ATLW on 7150 kc. at 2100 EST Sun.; GSN Mon. through Fri. at 1900 EST on 3595 kc.; PIM as NC: 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., UUH as NC.; Atlanta Ten-Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., VHW as NC. W4DBM has been reissued his old call of GN. We are sorry to add the name of another very nice guy. OTG, to Silent Keys. PLD, received his BA degree and is now taking graduate work. K4LOZ is out of the hospital and doing fine. ACH's XYL is back in the hospital. We wish her a speedy recovery. A new ham in Quitman is KN4OCI. K4DAP has worked 90 countries, but wonders who is XF1A. TOS has a new Viking Valiant, also a new HQ-100. K4DKM is in Navy radio school in Norman, Okla. K4HOU sure has been having a time with his antenna; he pulls too hard to tighten it so it gets even with him by falling down completely. Juanita Robinson, of Atlanta, now is KN4ODA and soon will be able to work OVS all she wants to. The Confederate Signal Corps is happy to say its membership is growing. TJS put his 75-meter antenna up a few more feet and is getting out much better. YC has a new 600-L amplifier and also an all-band beam. K4DNH is back in mobile business again after his receiver finally came back from the factory. K4AUM, Georgia's SEC, has just revised the whole State with many new ECs. All appointees, please check your certificates for renewal dates. Don't let them expire. The Georgia Cracker Radio Club will hold its regular meeting July 28 at Dublin, Ga., picnic style. Traffic: W4PIM 166, K4LVE 136, HMI 54, W4DDY 50, PBK 40, K4BAI 31, W4ETD 30, BXV 26, K4CSL 26, CZR 18, CZO 13, HMJ 13, W4CFJ 10, MVZ 9, PDP 6, BWD 4.

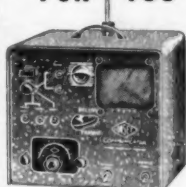
CANAL ZONE—SCM, P. A. White, KZ5WA—We have just received the sad news of the death in Baytown, Tex., of John Whitbread, W5UID, ex-KZ5FJ. Our deepest sympathy to his XYL, Bess, W5VDH, ex-KZ5CN. KJ (Continued on page 148)

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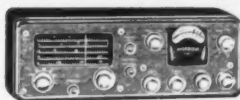


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has resigned the post of secretary of CZARA and MC has been "elected" to replace him. MJ and WA are both Stateside on business. We understand that DG and GD are leaving these shores for keeps in June. We wish Grace and George the best of luck and hope to work them soon from their new home in Texas. W9MDC and his XYL visited KA and RM for a week. BE, the old brasspounder has finally done it. He is on phone with a DX-35. EL, ex-KP4ML, also is on the air at last with a DX-100 and a WRL Tri-bandier. DH is looking for some 52-ohm coax for his 10-meter beam. The CZARA has resumed publication of its bulletin under the name *Crossroads QRM*, thanks to the efforts of VR. Traffic: KZ5HA 117, VR 92, RM 6, RV 3.

SOUTHWESTERN DIVISION

ARIZONA—SCM, Cameron A. Allen, W7OIF—SEC: YWF. The Grand Canyon Net meets on 7210 kc. at 9 a.m. Sun., LUJ as PAM. The Arizona Emergency Net meets on 3865 kc. at 7:30 p.m. Mon. through Fri., ASI as PAM. The c.w. nets meet on 3690 kc. at 8:00 p.m. Mon. through Fri. and on 7115 kc. at 4 p.m. Mon. through Fri. The Arizona Amateur Radio Club supplied communications for the yearly trip to Superstition Mountain. There were 1200 people on the trip with more than 300 on the long hike. They used 6 pack sets, 3 mobiles and 2 base stations on emergency power. Operators were BAD, CAF, ZMH, UCA, OUE, PMQ, UXZ, WKM, RIJ, OIF, JYH and WNTFMZ. Operators in Phoenix were CPY, WYY, RBA, UXJ, NFL, DWT, EBN and K7WA. The AEN is now operating on a five-night-a-week schedule. If you have been dropped from the net list and want to get back on send a post card to Lt. Col. Robert Jackson, ASI, P. O. Box 596, Fort Huachuca, with your call, name and address on it. Traffic: W7OIF 22, CAF 12, YWF 12, WNTFMZ 2.

LOS ANGELES—SCM, William J. Schuch, W6CMN—Asst. SCM: Albert F. Hill, 6JQB, SEC: LIP, RMs: BHG and GIP. PAMs: PIB and K6BWD. Thanks to all for the help given me during the past two years. GYH still schedules Japan, Korea and MARS traffic. DDE, GYH and K6OZJ made BPL. K6MON turned in a nice traffic total again. BHG still wants help on SCN, 3600 kc. 7:30-10:00 p.m. Check with him. K6COP is QRL on two nets. HJY is working three nets, NCS on two, SCN and Frigate. K6LVL is working hard in school but still has a good traffic count. INH is QRL traffic and MARS. The Long Beach Club is busy planning for Field Day and the Convention. New officers of the Lockheed Club are OON, pres.; Bill Berholdt, vice-pres.; HE, secy.-treas.; Al Cannells, sgt. at arms. K6EA has a new set of antennas. K6QZZ is NCS of the Valley 6-Meter C.D. Net. ORS is handling traffic and working u.h.f.; K6ICS is QRL college. BUK is skedding the KC4 boys. K6BTU now is in Manhattan Beach. K6PLW has a new shack. K6UYK has been tripping around the States. K6GTG has a kw. on 144 Mc. RW had a goodly crowd operating in the DX Test and ran up a winning score. The West Valley Club is holding code classes. Au revoir, gang, and thanks. Traffic: (Mar.) W6DDE 779, GYH 624, K6OZJ 253, MON 180, W6BHG 173, K6COP 149, W6HJY 142, ZJB 134, K6LVL 116, W6INH 99, K6EA 98, QZZ 64, HOV 42, GUZ 32, W6ORS 29, YSK 29, CMN 26, USY 18, K6ICS 14, W6K 8, BUK 6, K6DDO 5, BTU/6 4, PLW 2. (Feb.) K6QLG 5, BEQ 2.

SAN DIEGO—SCM, Don Stansifer, W6LRU—The Ryan Amateur Radio Club held its first anniversary meeting at the home of FWF. LRU, the SCM, gave a talk on the ARRL and the history of amateur radio. YXU demonstrated standing wave ratio devices. K6BX (ex-W4CY, JD, GZA, K6HP and WHGW) now is located in Bonita running a Viking Valiant with beams on 10, 15 and 20 meters. He has been licensed since 1924. K6PFP has resigned as treasurer of the San Diego Council of Amateur Radio Organizations because of working nights. ATZ is Field Day chairman for the Helix Club this year. The North Shores and Clairemont Clubs have merged. New officers are K6KIJ, pres.; K6TKG, vice-pres.; LNL, secy.-treas.; EWU, trustee. LWT and KUG demonstrated ham TV for the Upper Ten Club recently. Ex-IDHX is now K6YRF in San Diego. K6LDO is in boot camp at the Naval Training Center and will attend radio school there. New appointees this month include K6AXV as EC for the 6-meter group; FVA, in San Marcos, as EC for Northern San Diego County, and K6QWV, in Imperial Beach, as OES. The San Diego DX Club made slightly over a million points in the c.w. portion of the ARRL DX Contest. The top five scorers in order were KSM, LRU, BZE, CHV and KYG. K6RWM needs only Delaware for his WAS. HTN is now s.a.b. with a 20A. With the coming of summer all readers of this column are reminded to send in news and traffic totals prior to the 7th of each month for publication. Traffic: W6EOT 424, K6BPI 86, W6HTN 13.

(Continued on page 150)

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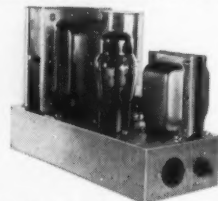
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WEST GULF DIVISION

NORTHERN TEXAS—SCM, Ray A. Thacker, W5TFP—SEC: BNG, PAMs: K5AEX and IWQ, RM: KPB, LGY advises that the East Texas State College ARC has been reorganized with PTZ as sponsor; BBN, pres.; LGY, vice-pres. AUJ reports he is getting very good QSL response from the Soviet Union. BKH was the leading OO in the 5th district. The Tyler ARC and Oil Belt ARC in Albany are now ARRL affiliated clubs. FIY is doing FB on 10 meters with his new Wonder Bar. The Texoma ARC has obtained a trailer and is rigging it up for emergency work on a fast basis, complete with a 3 1/2-kw. generator. The various storm warning nets in the section certainly are getting a workout this spring. The Panhandle Area hams did a tremendous job of communications during the blizzard. The reports we have received contain so many calls that it is impossible to list each and every one. I am sure that none involved will mind. Think this over—isn't it amazing the job that can be done when it doesn't matter who gets the credit! We had rather a "hair-raising" experience here in Dallas with the "twister" that raged through the western part of town. The hams here did themselves proud; activity was heard on all bands as well as Army and Air Force MARS frequencies. May I remind you again, the sixth of the month is my deadline for your activity reports! Traffic: K5WAB 1702, W5KYM 197, UBW 182, K5FFB 150, W5FCX 105, OVW 95, BOO 79, K5EMR 64, W5ASA 37, K5N5TH 36, K5-BKH 32, W5ZKT 10, OCV 9, K5CSM 3.

OKLAHOMA—SCM, Ewing Canaday, W5GQ—Asst. SCM: James R. Booker, 5ADC. SEC: LXH. PAMs: MFX and KY. RM: JXM. We all miss MGH, who died of a heart attack while operating his rig. New Official Phone Station certificates were issued in March to K5DVE, K5HIV and KY. DPJ and DVE are proud possessors of 20-w.p.m. Code Proficiency certificates. OLZ and SSZ Net certificates went to 17 stations which had a record of at least ten check-ins a month for three consecutive months. All nets are continuing to render a valuable public service in the State. The new Sooner Nooner Net had an average of over 15 check-ins per day with a total of 416 for the month and handled better than 5 messages a day with 134 for the month. The Edison High School Club of Tulsa has installed new Johnson Ranger and HQ-140 while waiting for the new call. Dick Francis, one of the youngest members of the Bartlesville Club, won a prize at the local science fair on the transmitter he built while waiting for his Novice call. New Novices this month include K5N5JE. K5NPBV has passed his General Class exam and is building a new 100-watt home-brew rig. K5ETH is another new General Class licensee. 70ER is now K5JSM and 81XU is K5JEA. K5EJC is on the air with a new KW-SI. Our congratulations to DRZ on making his third BPL. Traffic: (Mar.) W5DRZ 622, ESB 528, K5CAY 222, HZF 153, AOV 122, JXM 114, W5CCK 101, MRK 96, ADC 74, VEC 65, KY 64, GIQ 55, K5DVE 51, W5MQI 49, LXH 47, FNC 42, VAX 39, MFX 38, K5HIV 22, W5PNC 21, K5CBA 11, LJA 11, DLH/5 10, W5HHC 9, GOL 9, OOI 9, BBA 8, K5EQX 5. (Feb.) K5AOA 180.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF, LUU has a new Buick. LVE is now 2-meter mobile. LUU has made DXCC. DKK is a new member of the NTO and 7290 Nets. PM has a new Valiant. QKF has a new 6N2. BRZ is working DX with a new 10-meter beam. CRA is the new EC at Raymondville. AQK is mobile with a new Elmac and Oldsmobile 98. GMT is the only amateur I know who traded cars and got a completely-installed mobile rig with it. PPC has a new QTH. Wonder where the rig will land? K5APJ is working traffic over PXZ, the club station at Lamar State College of Technology at Beaumont, while attending school. ETA, Director of the West Gulf Division, visited the Corpus Christi Amateur Radio Club. Welcome to the new Harlingen Radio Club. DSY has a new mobile converter. AQK has a new Regency transistor mobile converter. It was good to hear the boys on the Central Texas Storm Warning Net keeping watch recently. DTJ is doing a nice job as OO in San Antonio. Traffic: W5DTJ 82, PXZ 17, DKK 9, K5GEM 8.

NEW MEXICO—SCM, Einar H. Morterud, W5FPB—SEC: K5DAA. PAM: DVA. The NMENP meets on 3838 kc. Tue. and Thurs. at 1800 MST, Sun. at 0700; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700. TITON was in California tutoring a Navajo in translating and transcribing the Bible on tape in Navajo; he was later hospitalized in Albuquerque. FED has a cubical quad for 15 and 10 meters. K5DAO is attending school in Washington, D. C. KWV is an Asst. EC. POI is mobile on 420 Mc. BCG has 15 watts on 75 meters. SB and POI have been busy with TV microwave system. SGC and NSV have been working on a TV translator. K5JLU is a new amateur in San Juan Co. CIN, KWR, UAR and ZU have been ap-

(Continued on page 152)

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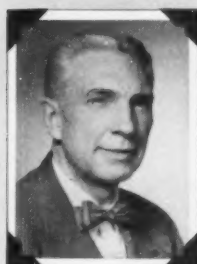
O. L. (Roy) Dewey
W1GWU
Manager
Govt. Service Dept.



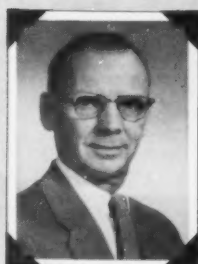
Clark C. Rodimon
W1SZ
Manager
Govt. Requirements Dept.



Edward K. Doherr
W1EEE
Asst. Manager
Govt. Service Dept.



W. Raymond Burrows
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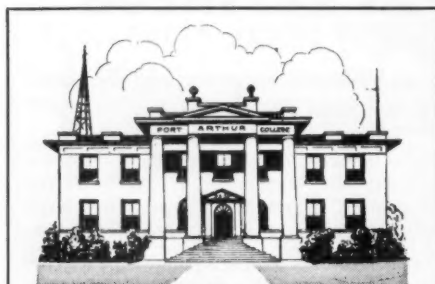
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pointed Asst. Directors. TBP has a 500B Globe King. Alamogordo amateurs furnished communications for a Sport Car Hill Climb. KWP converted the mobile to a 12-volt system. As this may be my last report as SCM, I wish to thank all those who have spent so much of their time and effort in promoting the ARRL program. Traffic: (Mar.) K5FHU 282, W5CIN 35, UAR 19, TBP 18, K5CEV 17, W5GEM 16, NQG 11, ZU 7, K5DAA 5, W5FPB 4, IGC 4, RKS 3, LEF 2. (Feb.) W5DVA 6.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCM, Aaron Solomon, 10C, SEC; PH, EK has received word that he is the first North American amateur to win the WAGM (Scotland) Award. Amateurs aboard HMCS Bonaventure operate under the call VE0NE and on HMCS Huron under VE0NA. PF has returned from the C.D. College at Arnprior, Ont., where he attended a communication course. YQ reports that MB is operating from the Yarmouth County Vocational High School. PZ is now using an FT-200 trap antenna and a high-level speech clipper. PQ, ZR, OM and WL have a 6-meter net operating nightly at 2000. GC and IB will be joining them shortly. AO has accepted an EC appointment for Cape Breton. ZL is active again and working the rare DX. Cmdr. John Roue has been successful in getting his old call, VE1FB, reassigned to him. VO2NA reports that the Labrador Net still meets nightly on 3750 kc. at 2130 GMT. Other active Goose Bay amateurs include VO2s AA, AH, AB, AD, DA, EA, JA, IA, QA and UA. Don't forget the Convention to be held at Charlottetown over the Labor Day week end. Brit Fader, FQ, was invited by KW and VE0ND to dine on HMCS Magnificent; a surprise was the presentation to him of a plaque with the ship's crest, inscribed for his services while they were in Egypt and the British Isles. Traffic: (Mar.) VE1IB 120, FQ 98, AV 78, OM 27, PZ 13, DB 9, AEB 5, VU 2. (Feb.) VE1PQ 61.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The Scarborough Radio Club held a successful dinner and celebrated the 76th birthday of IB, "Ontario's oldest ham." A severe loss to our ranks was the passing of HK, Father Williams will be missed by all. DU has transmitter trouble. CP is portable VE2 for a spell. NF will be heard on 2 meters. NW has gone hi-fi. The West Side Club was presented with the Field Day Trophy for its fine efforts in '56. The St. Thomas Radio Club publishes a neat monthly bulletin edited by OT. The Quinte RC presents its new bulletin under CAB. The Skywide RC of Toronto issues a five-page club paper called *Skyhook*. The Nottown Radio Club held a very excellent dinner which was well attended. The SCM was guest speaker at the Ryerson Institute of Technology recently. The SEC and the SCM also attended the Scarborough dinner. Also seen there were NO, DEX, GH, DFA, DFC, DZA, AMT, RG, QO, GK, AYL and many others. DPO is ORS and will take Ontario Phone Net traffic for c.w. nets. AML received an engraved lighter from C.O. HMCS Magnificent. He also worked into Cocos Island. AJR and KM visited the Dayton Hamvention. The YLs are doing well on their Ten-Meter Net. The North Bay gang has a new meeting place, the Sibbett Bldg. Congrats to VP on making his first BPL. The Metro, Nottown, Sky Wide and West Side Radio Clubs, all of which have almost 70 per cent members in the AREC Toronto Area, were active in the Sportsman Show held in Toronto in March. The Metro Radio Club made BPL with its score at the Sportsman Show. Details of the Ontario Provincial ARRL Convention soon will be forthcoming. BUT has a new vertical antenna. The Muskeg Net meets on 3755 kc. Traffic: VE3MRC 578, VP 504, BJV 137, BUR 115, NO 110, EAM 100, GI 90, NG 89, AUU 87, EAU 61, DPO 40, CJM 24, DH 24, AJR 16, IU 11, KM 11, OT 9, AML 7, DPL 5, AVS 4.

ALBERTA—SCM Sydney T. Jones, VE3MJ—We are sorry to have to report our popular radio inspector, S. A. Dhatford, XD, is confined to the hospital after a serious heart attack. At the time of writing (Apr. 7) Shaddy is showing signs of improvement. His many friends wish him a very speedy recovery. UB has taken over the appointment as EC for the Calgary Area. As reported in this column several months ago the Calgary Club has undertaken the task of publishing *RP*, formerly published by the Lethbridge gang. Material for publication should be forwarded to P.O. Box 196, Calgary, not later than the 15th of each month. SX reports he will be busy with spring work on the farm from now on. YE says he is having trouble with the proposed new gallon rig. NO r.f. KC, CE and YG have returned from a communications course in C.D. at Arnprior. MJ has taken off on a visit to his stamping grounds in Southern British Columbia. TG

(Continued on page 154)

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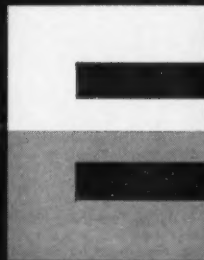
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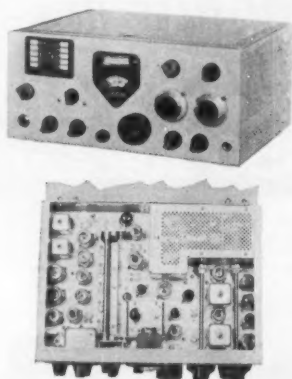
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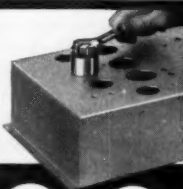
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has decided on an early vacation. NA has joined the Edmonton gang on 144 Mc. Several of the gang are going for beams in an effort to increase the range. Traffic: VE6HM 152, TT 27, OD 16, MJ 8, SP 6, SX 2.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—We have heard no word regarding the call sign auto license plates but this is not through the lack of work put in on the project by FB. KX is on RTTY as OBS each Tue. and Fri. at 2015 PST on 7144 kc. and 144 Mc. HR dropped an epistle about the 2-meter activities on the Island mentioning the following gang on 2 meters: AOG, GR (he always liked 2-meter insulators), DH, JG, AKN, AKV, MT, ZD, ZW, AIV and HR. They get together Sun. and Tue. at 9:00 p.m. PST. No frequency has been mentioned. One point I would like to mention is that when you are working W8s near the band edge do not entice them down into the Canadian phone band. You can QSY to get in the clear but it might mean a "pink ticket" for them if they follow you without realizing they are going out of their phone band limitations. We understand we have a DX club in Vancouver but no word of activity has ever reached this column. It's spring and antenna time again, so clean up the insulators, resolder the connections and renew the halyards or start climbing those slender poles to replace them. I wouldn't dare. I had to take the 45-ft. pole down and this time I put two pulleys and ropes up.

SASKATCHEWAN—SCM, Harold R. Horn, VE5HR—As this may be my last report I wish to thank you for the cooperation received during my three terms as SCM and wish the best of luck to my successor. Please give him your support as these reports and other activities cannot be carried on without it. MZ and HM are now on with a DX-100. NL now works phone, having made the grade. EN, MZ and BZ provided a 3-way hookup for district BO Scout officials to plan a scoutmaster training camp. DF has been transferred to Saskatoon with the D.O.T. OC has been promoted to assistant chief operator with C.P. Communications at Regina. XX and YY are moving to Weyburn, where XX will manage the new broadcasting station. We are sorry to record the passing of BO at Swift Current. Augie will be missed by many of the fraternity. 2QJ is now located at Regina and hopes for a VE5 call soon. A welcome back also is extended to 6AL, who is in Moose Jaw again. The Annual Saskatchewan Hamfest will be held at Lake Waskesiu June 29 and 30. The Prince Albert Club is host and a good time is assured all. Come one and all; a good time is a certainty. You also may win the DX-100 which is the grand prize. Watch for further Bulletins.

V.H.F. QSO Party

(Continued from page 60)

v.h.f. bands. The sum of these points will be multiplied by the number of different ARRL sections worked per band; i.e., those with which at least one point has been earned. Reworking sections on additional bands for extra section credits is permitted. Cross-band work does not count. Contacts with aircraft mobile stations cannot be counted for section multipliers.

5) A contact per band may be counted for each station worked. Example: W2TBD (S.N.J.) works W1PHR (Conn.) on 50, 144 and 220 Mc. for complete exchanges. This gives W2TBD 4 points (1 + 1 + 2) and also 3 section-multiplier credits. (If W2TBD contacts other Connecticut stations on these bands, they do not add to his section multiplier but they do pay off in additional contact points.)

6) Each section multiplier requires completed exchanges with at least one station. The same section can provide another multiplier point only when contacted on a new v.h.f. band.

7) Awards: A certificate will be awarded to the high-scoring single-operator station in each ARRL section. In addition, the high-scoring multiple-operator station will receive a certificate in each section from which three or more valid multiple-operator entries are received. Certificates will also be given to the top Novice and Technician in each section where three or more such licensees submit logs. Award Committee decisions will be final.

8) Reports must be postmarked no later than June 26, 1957, to be eligible for awards. See the sample log accompanying this announcement for correct form, or a message to Headquarters will bring printed blanks for your convenience.

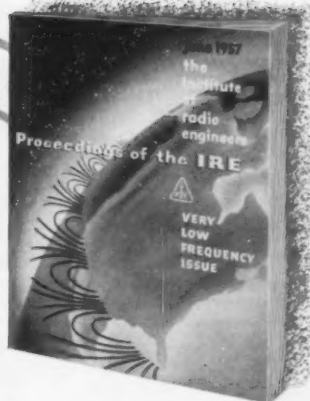
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This year, the Boulder Laboratories of the National Bureau of Standards and the IRE Professional Group on Antennas and Propagation co-sponsored a Symposium at Boulder, Colorado, on the propagation of very low frequency radio waves. From the papers given at this important meeting the editors of *Proceedings* have chosen those of broadest interest for publication in the June, 1957, issue.

Typical of the service offered members of IRE is this VLF report — to be used now and referred to for years to come. If you are not a member of *The Institute of Radio Engineers* be sure to reserve a copy of the *June Proceedings of the IRE*, today!

Partial Contents of this VLF issue:

- "A Technique for the Rapid Analysis of Whistlers," by J. K. Grierson, Defense Reserve Board, Ottawa, Ontario, Canada.
- "VLF Radiation from Lightning Strokes," by E. L. Hill, School of Physics, University of Minnesota.
- "Some Recent Measurements of Atmospheric Noise in Canada," by C. A. McKerrrow, Defense Reserve Board, Ottawa, Ontario, Canada.
- "Intercontinental Frequency Comparison by Very Low Frequency Radio Transmission," by J. A. Pierce, Croft Laboratory, Harvard.
- "The Mode Theory of VLF Ionospheric Propagation for Finite Ground Conductivity," by James R. Wait, National Bureau of Standards, Boulder, Colorado.
- "The Geometrical Optics of VLF Sky Wave Propagation," by J. R. Wait & A. Murphy, National Bureau of Standards, Boulder, Colorado.
- "Characteristics of Atmospheric Noise from 1 to 100 Kc/s," by A. D. Watt & E. L. Maxwell, National Bureau of Standards, Boulder, Colorado.
- "The Present State of Knowledge Concerning the Lower Ionosphere," by A. H. Waynick, The Pennsylvania State University.
- "Noise Investigation at VLF by the National Bureau of Standards," by W. Q. Crichton, National Bureau of Standards, Boulder, Colorado.
- "Reflection at a Shapely-Bounded Ionosphere," by I. W. Yeboff, Stanford University.
- "The Attenuation Versus Frequency Characteristics of VLF Radio Waves," by J. R. Wait, National Bureau of Standards, Boulder, Colorado.
- "The Waveguide Mode Theory of the Propagation of VLF Radio Waves," by K. G. Budden, University of Cambridge, England.

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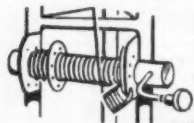
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How's DX?

(Continued from page 98)

larly hungry for W7/K7 contacts near 14,010 kc. around zero hours GMT. This from W2NC1 WIANU worked UA3DQ/MM on 15 who claimed to be returning from a visit to the Antarctic and UA1KAE, Russia's ham station at Pt. Mirny. Let's hope his holds were crammed with UA1KAE logs and/or QSLs SP6BZ, after giving the proposition much study, writes ZAIKUN off as strictly spurious in lines to W6ZEN K2ORR (ex-W2JFE-W5QXH-DLAFH) is stationed in Portugal without prospect of hamming authorization. So Pete and family have embraced a hobby almost as rugged as DXing — bullfighting.

Hereabouts — Typical ham triumph over adversity is no better exemplified than by K9EAB. W6ZZZ declares that Cliff, confined to an iron lung since stricken with polio in 1949, became a Novice last summer, obtained his Conditional license in November and now has a DX record of 81/51 on 15 meters. "I can do about 15-18 w.p.m. and control the rig with key and relay arrangement. Dad helps by tuning and doing my secretarial work." Verily, the higher some fellows do bounce W7DJU overheard KC4USH comment on amateur ham (and wild) life: "Cape Adare is a rookery supporting 150,000 penguins and their young. They've left for the winter but will return around October to raise 150,000 more little ones. Winter night is coming now and days rapidly get shorter. Night brings elaborate displays of aurora enjoyed by all. The family atmosphere of this far-man base keeps morale high." W2DGV finds PJ2ME seeking an FS7 license and 160-meter permit W6CFK, acerbic with the San Jose Evening News, gave our DX game fine publicity in one of his recent columns. We all know how difficult it is to describe ham radio in lay terms and we join K6DV in applauding a very neat DXposition K17CAW knocks off in August and despair of the Alaskan DXCC by then, for prop conditions in K17 are steadily grim According to W6YY, LU5KH visited Los Angeles in April Cocos Island and TI9CR were briefly activated by TI2s CMH and LA in early April. Cocos, you know, is where billions in pirated bullion are presumed to repose. TI9CR wasn't as active as expected but who can blame the lads for taking time off the air to dig an occasional hole or two? W8NGO wonders if spacing ARRL Test week ends three weeks apart wouldn't help chances for better average conditions. "Would still be a toss-up, as we see it Height-hungry W3WPG wonders how to go about wiping the 120-foot tree thriving in ex-W3DGM's (K4LPW's) Chester, Penna., back yard LU9DAB, dabbling with 7 watts on 10 phone, shipped a first airmail QSL to W9NOH W9DSO calls attention to a newspaper clipping which declares ex-HI8WL's 15-year-old son to be a guitar-plunking sensation on Dominican Republic television. D. R. televisioners hope he'll return with pop next fall, and so do we W8YIN, now 222/200, is giving s.a.b. a whirl and reports a fast 21 countries via that medium From WA4UL, 170/150: "I have installed a 'Gentleman' and 'Haw' switch on my Confederate Kilowatt (500 watts). In the 'Gent' position she drops down to a nice comfortable 50 watts input; in the 'Haw' position she stands up and groans with the full 500." Well, there are many piggies running around with QRP, and many square-shooters wheeling kilowatts around, too. It is true, however, that a boorish DXer with QRO is more noisome than the QRP type YN4CB visited W6s QJA SUP, K6IXU and others in California's Roseville area CO2HB is within an ace of DXCC as a result of 15-meter phone and c.w. efforts W7ENW, 215/201, laboriously checked his voluminous QSL files only to find himself shy of "DXCC 2" by about a dozen cards W4VNE, four times DXCC under various calls, found enough abandoned TV-antenna scraps around his Dyersburg, Tenn., neighborhood to lash up a 28-Mc. beam that scored 54 swift 10-c.w. countries

Now what was your country's total ten years ago?

Ten Years Ago in "How's DX?" Column emcee W1CH reports in prefatory remarks that the new coding signal, KN, introduced by ARRL's Communications Department in April '47 QST, is catching on with a bang Bandwise, 20 c.w. is boss with CP1AL, CR7VAL, EK1s AS AZ, FT4AN, GC8NO, HSIAL, Js 2A0 2AG 4A4C, LI2BO, LX1JW, OE9AA, OY3IG0, PKs 1AW 2AA 400 6AX 6EE 6HR, SP3DO, SU1RX, TA1DB, UA4CA, UA8CTU, UB5s AC BB HO, UD6KAB, UD65-M, UB-KFQ, UO5YW, UO2AB, VR5FL, VS4VR, VS7s AP IT MB, W3EKK/VK9, XZ2AN, YL2s AM JJ, YJ1AB, ZC6DD and ZP4A. On 14-Mc. A3 we note J9KC, K6ETTF/KC6, KP6AT, SV1AH, UA1AB, VS7ES and W6ONP/KW6. Ten meters provides LX1SI, PK1MJ, PZ1A, SU1WS, VS9AB, W6VKV/16, XU6GR/L, YL2s AT CA, YR5V and ZC6NP, all mostly on voice. 14.5-Mc. gang chases PK2OL, ZLs 1DI 2QM and numerous Europeans. Our 40-meter men manage CT2XD, OX1G, SU3GM,

(Continued on page 168)

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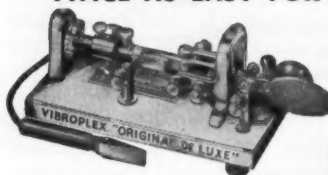
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158

TG9JK, VR2AN, VU2AC, W3EKK/J2, YU7KX, ZC6AA and ZM6AC... Ex-W5AYR, on duty with the Fourth Byrd Antarctic Expedition, submits an impressive list of Ws heard in the far south... The XA prefix is to be shelved in favor of 8V8, and it is also reported that "political difficulties" have curtailed amateur activity in Rumania.

Lighthouse Tube Circuits

(Continued from page 21)

tripling, or 50 per cent running straight through on 432 Mc.

In coupling to the plate lines it was found that over-coupling made the plate dip appear at a point somewhat away from the setting that gave maximum output. This is a good check on proper setting of the coupling loop. There should be a good dip at resonance, either as an amplifier or a tripler. In fact, the user should check carefully to see that he has the desired harmonic, as it is very easy to be misled by the considerable dip that can be seen on a wrong one.

When amplitude modulation is to be used it should be applied to the driver stage as well as to the amplifier. This is characteristic of grounded-grid stages, of course. Some of the drive appears in the output. For this reason it is not advisable to operate a grounded-grid frequency multiplier in a final stage that is feeding an antenna. This should be kept in mind particularly by holders of Technician licenses. The frequency of the driver stage, in this instance, is in a band that is not open to holders of this class of ticket. And radiation of a strong signal on 144 Mc. when we are working on 432 is not to be recommended for anyone.

At only 250 to 300 volts on the plates either amplifier may be run without forced-air cooling. The 2C39A job can be run at considerably higher input if an airflow is directed through the tube's plate-cooling fins.

One final word of caution: Both types of tubes are fragile. If you intend to do any work on either unit, or if you are going to carry or ship it anywhere, remove the tubes. W4ECL is not the only one who learned this lesson the hard way!

— E.P.T.

Six-Meter Converter

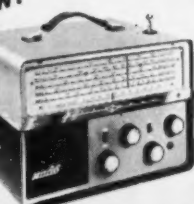
(Continued from page 23)

set at zero resistance, for maximum gain in the second stage.

The overtone crystal oscillator uses a tuned "plate" circuit with the screen grid of the 6BA7 acting as the oscillator plate. With some overtone crystals extra feedback is needed. This is shown in the form of a single turn of hook-up wire wrapped around the tuned circuit in the correct winding direction, and connected in series with the crystal to ground. The correct winding direction is such that the two coils are, in effect, a continuous winding from plate to the crystal. The oscillator screen voltage resistor can be set to give about 10 volts of r.f. on grid pin 2 of the 6BA7, or about 1/2-ma. d.c. through the grid leak. Some experimenting with the cathode and screen grid resistors is advisable with a given

(Continued on page 160)

NEW!



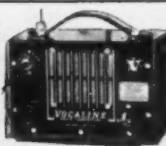
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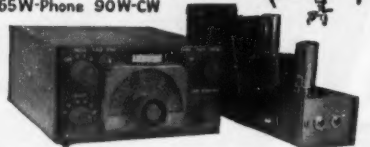
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overtone crystal, in order to arrive at good sensitivity and minimum cross-modulation effects.

The r.f. circuits can be set individually to about 52 Mc. with a grid-dip oscillator, shorting out the other coils not being adjusted. The tubes should be in place, but no power should be applied to the converter. Then a crystal noise generator can be used to tune up all the circuits for minimum noise figure at several places in the 50-Mc. band, with the converter in operation connected to a communication receiver. With a few minutes' work on this nearly uniform sensitivity and low over-all noise figure can be obtained.

Transmit-Receive Switch

(Continued from page 25)

riated from RG-8/U coaxial cable. This cable has a rating of approximately 6000 peak r.f. volts, and in the laboratory it withstands in excess of 20,000 volts of d.c. Actually, in normal use it is usually limited by current rather than voltage. The capacitance of the cable is 30 μ f. per foot, so that one may measure off the required capacitance by the inch, and end up with a really low-loss and practical unit.

Examination of the circuit will show that the t.r. switch input is a high impedance for low frequencies. It is advantageous, therefore, to have the tank circuit at d.c. ground potential so that crosstalk at power-line frequencies will be eliminated. Fortunately, this is the case in practically all modern transmitters. A type of noise customarily picked up with electronic t.r. switches is that caused by plate current flowing in the power amplifier. It is necessary, therefore, to bias the tubes beyond cutoff when receiving.

The output of the 6AH6 feeds 75-ohm coax cable by means of a carefully designed broad-band transformer utilizing a selected core. The frequency characteristic of the t.r. switch is flat within 1 db. from 3.5 to 30 Mc. with essentially unity gain. The actual gain, therefore, is that due to the combination of the plate tank circuit and the capacitive voltage divider.

The increase in the receiver noise (of an SP-600) due to the t.r. switch made no practical difference in received signals when the t.r. switch was operated as a unity-gain device. When operating with any gain in the plate tank circuit, however, the signals seemed to jump right out of the background. With transmitters of 150 watts or less, where the gain is of the order of 15 db. or more, ambient noise is almost always the limiting factor in receiving when using the t.r. switch. This advantage decreases, of course, with higher powers.

Considering the t.r. switch as part of the transmitter also solves the TVI problem that has plagued some t.r. switches heretofore. The TVI generated in the t.r. switch is generally minute when compared to that generated in the transmitter tubes so that it will have practically no effect when compared to the overall TVI picture of a particular transmitter. This means that there is little chance for the t.r. switch to cause

(Continued on page 162)

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TVI if the transmitter is normally TVI free.

A word now to those who might wish to construct a t.r. switch similar to the one described above. Other than the r.f. output transformer, its construction is quite straightforward. It must be remembered, however, that it is actually an r.f. stage and deserves the shielding, bypassing and careful layout demanded by such a device.

Banned

(Continued from page 100)

from the former French Indo China, Prince Norodom Sihanouk, former boy-king and ex-premier and now leader of the Sangkum (popular socialists party) pointed out that his country is a "neutral country and forebears to make any ideological alliances with other countries." Since the Prince is head of the political party which controls each and every seat on the Cambodian National Assembly, he is nominal head of the country under King Norodom Sihanouk. Apparently Cambodia just wants to tight-rope it in view of the world situation and remain as isolated as possible by just sitting on the fence.

Iran, the modern Persia, has a common border with the Soviet Union of nearly 2,000 miles. There is continuous concern in government circles over political infiltration that could affect the independence of the country. Osan Eghbal, spokesman for the Ministry of Foreign Affairs, told me — "It is because of these 'left-elements' of which there are many in my country, that Iran is unable to permit operation of amateur radio stations. If we permitted amateurs to transmit, it would mean our limited security facilities would have to listen all the time to observe if communications were taking place between left elements inside and to beyond the country. Our government is a constitutional monarchy and it is the policy of the government to give as much personal freedom as we can. However, we must protect our independence against those who would overthrow the government."

Field Day Rules

(Continued from page 47)

many stations as possible; for home stations to work as many portable and mobile stations as possible.

3. Conditions of Entry: Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Contest Committee.

4. Entry Classification: All entries will be classified according to number of transmitters in simultaneous operation. They will be further classified as follows: "A," club or nonclub group portable stations; "B," unit or individual portable stations; "C," mobile stations; "D," home stations operating from emergency power; "E," home stations operating from commercial power sources. Thus a club or group running three transmitters simultaneously will be in the 3A classification, or a mobile station with one transmitter will be in the 1C classification.

Portable stations are those installed temporarily, for FD purposes, at sites away from customary fixed-station locations. Portable equipment or units must be placed under one call and the control of one licensee, for one entry. All control locations for equipment operating under one call must lie within a 1000-foot diameter circle.

Group participation is that portable-station work accomplished by three or more licensed operators.

Unit or individual participation is that portable-station

(Continued on page 164)

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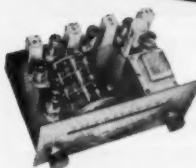
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MGP3	650 ct	245	.150	6.3	5	5	3	KB	
MGP4	800 ct	318	.175	5	3	6.3	8	LB	
MGP5	900 ct	345	.250	5	3	6.3	8	MB	
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MP12	✓	✓	✓	0.25 0.25	0.2-1.0	.004	2	0.7 250	
MP13	✓	✓	✓	0.5 0.5 0.5	0.2-1.5	.002	3	1.8 250	
MP14	✓	✓	✓	0.5 0.5	0.2-1.5	.002	2	1.8 250	
MP15	✓	✓	✓	0.5 0.5 0.5	0.2-2.0	.002	3	1.8 500	
MP16	✓	✓	✓	0.5 0.5	0.2-2.0	.002	2	1.8 500	
MP17	✓	✓	✓	0.7 0.7 0.7	0.5-1.5	.002	3	1.5 200	
MP18	✓	✓	✓	0.7 0.7	0.5-1.5	.002	2	1.5 200	
MP19	✓	✓	✓	1.0 1.0 1.0	0.7-3.5	.002	3	2.0 200	
MP20	✓	✓	✓	1.0 1.0	0.7-3.5	.002	2	2.0 200	
MP21	✓	✓	✓	1.5 1.5 1.5	1.0-5.0	.002	3	2.0 500	
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reducers, vacuum and other multivari-
able condensers. One hole mounting. Handy
logging space. Case: 2" x 4". Shaft: 1/4" x 3". TC
2 has 2 1/2" dial — 1 1/2" knob. TC 3 has 3" dial —
2 1/2" knob. Black bakelite.
TC 2 \$4.20 — TC 3 \$4.75 — Spinner Handle 75c extra
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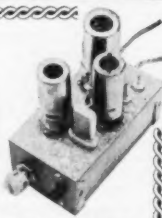
- Built-in noise clipper for positive and negative peaks. Has adjustment for clipping level. Little distortion of audio signal.
- Five easy connections to your car radio —
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- 2, 6, 10, 11, and 15 meters.

MODEL C-280 Plans, photos, and parts list \$1.00
Punched & Printed chassis with 4 slug tuning coils 6.75
(Plans are included with chassis — SPECIFY FREED)
Parts for Model 280 — (Xtal included) 8.50
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Size: 4" x 2 1/4" x 1 1/4"

Mobile converter
w/cascode Lo-Noise
RF, Triode Mixer
Crystal controlled or
VFO tuning. Using
auto radio as highly
selective tuneable IF
stage.

work accomplished by either one or two licensed operators.

Mobile stations are complete installations including power source and antenna, mounted in or on vehicles and capable of being used while in normal motion. If they utilize antenna supports not normal or suitable for use during motion, installations must be classified as portable instead of mobile. Each mobile entry call must be different from any other FD station participating.

Home-station participation is that work by fixed amateur stations not operating portable or mobile.

A transmitter used to contact one or more stations may not subsequently be used under more than one other station call during the Field Day period.

5. Field Day Period: All contacts must be made during the period indicated elsewhere in this announcement. An entry may be operated no more than 24 consecutive hours of the 27 hours available.

6. Bands: Each phone and c.w. band is regarded as a separate band. The following (and additional u.h.f.-s.h.f. bands) constitute separate bands: A1: 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.00 "west," 3.5-4.0, 7.0-7.3, 14.0-14.35, 21.0-21.45, 26.96-27.23, 29.0-29.7, 50-54 and 144-148 Mc. A2: radioteletype and frequency-shift keying are grouped with A1, in the bands where they are allowed. A3: 1.800-1.825 1.875-1.900 "east" or 1.900-1.925 1.975-2.000 "west," 3.8-4.0, 7.2-7.3, 14.2-14.3, 21.25-21.45, 26.96-27.23, 28.5-29.7, 50-54, and 144-148 Mc. All forms of voice transmission will be grouped with A3, in the bands where they are allowed. (In Canada and Cuba, their respective phone bands apply.)

The use of more than one transmitter at one time in the same band is not allowed.

7. Exchanges: Signal reports and ARRL section (or specific location) must be exchanged in proof of contact.

8. Valid Contacts: In Class A, B and C, a valid contact is a completed exchange with any amateur station. In Classes D and E, a valid contact is a completed exchange with any station in Class A, B or C. Cross-band contacts are not allowed. Contacts by mobile stations may be made in motion or from any location(s). A station may be worked more than once only if the additional contacts are made on different bands.

9. Field Day Message: A Field Day Message is one originated by a Class A, B, or C station and addressed to the SEC or SCM (see address in QST, p. 6) stating the number of operators, the field location, and the number of AREC members at the Field Day station. Only one Field Day Message may be originated.

10. Scoring:

Points: Each valid contact counts 1 point.

Message Credit: Credit for handling messages may be obtained only as follows: 25 points for originating one Field Day Message to SEC or SCM. In addition, each Field Day Message received for relay will score 1 point when received by radio and 1 point when sent onward by radio. No FD Message may pass through the same station twice. There will be a deduction of 10 points for omission of handling data or for defects in form. Copies of all messages originated and relayed must accompany Field Day reports.

Multiplex:

Power: Output-stage plate input under 30 watts: 3. Output-stage plate input over 30 and under 150 watts: 2. Output-stage plate input over 150 and under 1000 watts: 1. The plate input of a grounded-grid amplifier is its plate input plus the plate input to the driver stage.

Independence-of-Mains: All radio equipment independent of commercial power source: 3. All radio equipment not independent of commercial power: 1.

Battery Power (applies to Class B and C only): 1.5. The battery capacity or size shall in all cases be adequate to permit one hour's continuous operation of the station. Charging batteries from commercial mains while batteries are connected to transmitter or receiver voids the "independence-of-mains" and "battery power" multipliers.

Multiplexers do not apply to Class D and E entries.

Final Score: The final score equals the total "points" multiplied by the "power multiplier" multiplied by the "independence-of-mains" multiplier (multiplied by the "battery power" multiplier, if applicable). Where different multipliers apply during the Field Day period, points are multiplied by the multiplier in effect at the time the points were earned.

11. Club Aggregate-Mobile Scores: Entries under Class C may be combined to form a "Club Aggregate-Mobile Score." The club name must be noted on the in-

(Continued on page 109)

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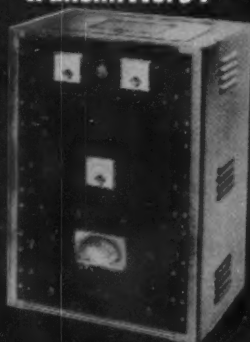
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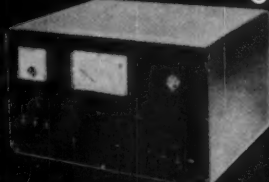
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transmitters!

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\$30.40 a month

New, commercial-type compression circuit allows three times the "audio punch". Completely bandswitching, 160-10M. Built-in stable VFO, 540 watts on 10mc, CW and SSB (P.E.P.), with external exciter. Transmitter relay controlled, and including built-in antenna relay. Pi-Nel matches most antennas from 52-600 ohms. Electronic Grid Block Keying for maximum clarity of signal (time-sequence operation). New audio compression circuit holds modulation at high level without usual clipping distortion. MK section enclosed with complete shielding for TVI suppression. Separate power supply for modulator, allowing better overall voltage regulation. Many other top features including provisions for crystal operation, push-to-talk, etc. Table-top size: 31x22x14 1/2.



Globe Champion 300



Kit Form: \$349.00

Completely bandswitching, 160-10 Meters—350 watts on CW, 275 watts on 10mc and 300 watts SSB (P.E.P.), with external exciter. Built-in VFO, "push-to-talk" antenna changeover relay, provisions for crystal operation, improved time-sequence Keying. Pi-Net output circuit, 50-100 ohms. Extensively TVI-shielded, filtered and bypassed. High level Class B Modulation with spatter suppression, new audio compression circuit holds modulation at high level without usual clipping distortion. Ready to go on SSB with any external exciter. Two Amperex 9509 final tubes (1000 V on plates) allow 33 1/3% safety factor.

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Compact, completely bandswitching transmitter for 6-80 Meters; allows operation of 6-M band by technicians, novice CW bands, or use by advanced ham without becoming obsolete. Completely self-contained with built-in power supply for 45 watts CW, 50 watts phone. High level modulation, TVI-shielded cabinet. Pi-Net output on 10-80M; link-coupled output on 6-M, matching into low impedance beams. New-type shielded, full-range plastic meter for better readability. Adaptable for Mobile Operation.

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dividual reports, and the club secretary must submit a claimed aggregate score. Credits to the extent supported by the reports submitted to ARRL will be allowed. Only bona fide members of the club, residing in the club territory, may contribute to the aggregate-mobile club listing.

12. Reporting: Mail reports or entries on or before July 20. Reports must show starting and ending time of FD operating period, bands used, dates and contact times, calls of stations worked, signal reports set and received, and ARRL sections or locations of stations worked. Reports must also show power inputs and sources of power, number of transmitters in simultaneous operation, location of station, number of persons participating, class of entry, and score computations.

World Above 50 Mc.

(Continued from page 60)

on 220 Mc. during March, K6EPT and K6LXU being new ones. 220 picking up.

W7PUA, Eatonville, Wash. — Completed 2C39A tripler for 1296 Mc.; now working on 2nd converter using two 416B r.f. stages. Anyone have info on straight-through amplifiers for this frequency?

W9GAB, Beloit, Wis. — Aurora observed on 144 Mc. 11 times in March. Keeping 432-Mc. skeds with W9DRN, 70 miles, at 2100 CST, except Tuesday. 432-Mc. transmitter with 4X150A delivers 35 watts output with 50 in. 416B pre-amplifier at antenna improving reception.

W9MHP, Ravenswood, Ind. — W9ULH, Portland, Ind., worked W8JUG on 220, 209 miles. W9HLY, Decatur, also worked him.

W0MNP/5, State College, N. Mex. — Experimenting with 6AF4 oscillator using circuit described by W3MLN and W3HFW in April, 1948, QST and in *Handbooks* up to 1954, developed oscillation up to 1260 Mc. or more. Plate and grid lines $2\frac{1}{2}$ inch long operate on $\frac{1}{4}$ -wave mode.

YL News and Views

(Continued from page 68)

W8KLZ.....	16	9	180*
W8OGY.....	19	5	119*
W9MPX.....	176	49	10,780*
W9UON.....	222	26	7,215*
W9VNC.....	156	29	5,655*
K9CQF.....	119	35	5,206*
K9AMD.....	30	10	375*
K9DBD.....	16	9	180*
K0BFS.....	379	59	27,951*
K0BMS.....	322	42	16,905*
W0NIQ.....	313	40	15,650*
W0PFS.....	238	45	13,388*
W0BFV.....	85	21	2,231*
W0ZWL.....	65	24	1,950*
K0BTU.....	50	18	1,125*
KL7BHE.....	376	56	26,320*
KL7ALZ.....	261	56	18,470*
KL7BJD.....	278	45	15,638*
KZSVR.....	273	48	13,104*
VE3DMX.....	209	49	12,781*
VE3AJR.....	131	36	5,895*
VE3DDA.....	15	8	150*

OM C.W.

Call	No. of Contacts	Sections Worked	Score
W1BNS.....	42	25	1,313*
W1AJZ.....	39	26	1,268*
W1LQQ.....	25	16	500*
W1DPB.....	22	14	385*
W1LNM.....	8	6	60*
W1VBR.....	3	2	8*
K2DSW.....	52	27	1,755*
K2KDW.....	47	27	1,586*
W2NIY.....	36	22	990*
W2EMW.....	34	22	935*
K2DEM.....	34	19	808*
K2CLQ.....	28	20	700*
K2HXR.....	25	15	469*
W2SAW.....	20	17	340
K2OPJ.....	18	15	338*
W2LRO.....	16	13	260*
W2DMU.....	17	13	221
K2GTC.....	16	11	220*
W2BWW.....	17	9	195*
K2PPV.....	15	10	150
W2LGK.....	8	6	60*
K2UOY.....	7	5	44*
K2OEG.....	6	5	38*

(Continued from page 168)



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SEE PAGE 109 NOVEMBER QST

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W1BNS.....	56	32	2,240*
W1NEP.....	49	24	1,470*
W1NLM.....	45	26	1,463*
W1FTF.....	41	26	1,333*
W1BCD.....	42	21	1,103*
W1BAB.....	40	20	1,000*
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(Continued on page 170)

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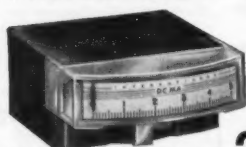
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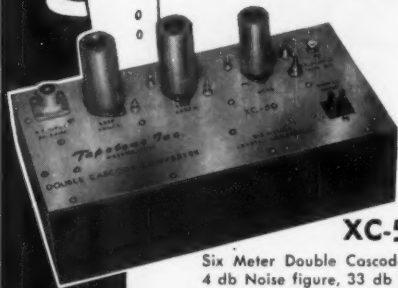
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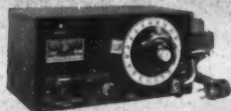
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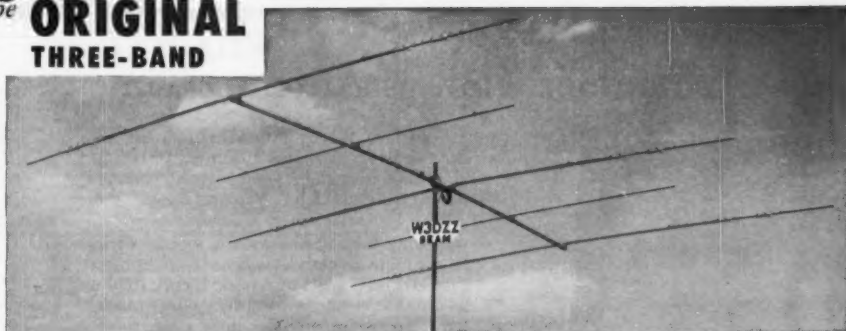
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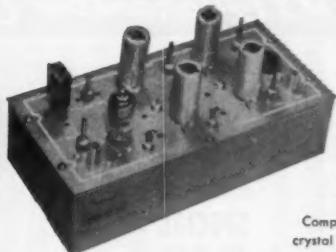
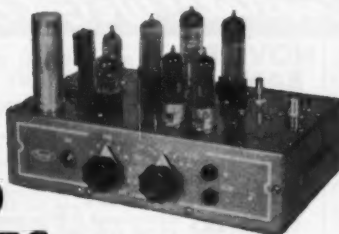
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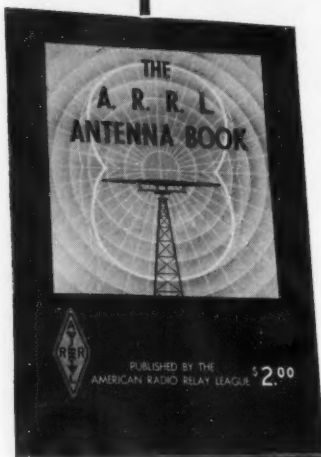
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2029	2560	3015	4015	5265	6095	8520	7045	7453	7728	7986	8295	8520
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2068	2625	3080	4080	5330	6160	8585	7110	7518	7793	8051	8360	8585
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2086	2655	3110	4110	5360	6190	8615	7140	7548	7823	8081	8390	8615
2089	2660	3115	4115	5365	6195	8620	7145	7553	7828	8086	8395	8620
2092	2665	3120	4120	5370	6200	8625	7150	7558	7833	8091	8400	8625
2095	2670	3125	4125	5375	6205	8630	7155	7563	7838	8096	8405	8630
2098	2675	3130	4130	5380	6210	8635	7160	7568	7843	8101	8410	8635
2101	2680	3135	4135	5385	6215	8640	7165	7573	7848	8106	8415	8640
2104	2685	3140	4140	5390	6220	8645	7170	7578	7853	8111	8420	8645
2107	2690	3145	4145	5395	6225	8650	7175	7583	7858	8116	8425	8650
2110	2695	3150	4150	5400	6230	8655	7180	7588	7863	8121	8430	8655
2113	2700	3155	4155	5405	6235	8660	7185	7593	7868	8126	8435	8660
2116	2705	3160	4160	5410	6240	8665	7190	7598	7873	8131	8440	8665
2119	2710	3165	4165	5415	6245	8670	7195	7603	7878	8136	8445	8670
2122	2715	3170	4170	5420	6250	8675	7200	7608	7883	8141	8450	8675
2125	2720	3175	4175	5425	6255	8680	7205	7613	7888	8146	8455	8680
2128	2725	3180	4180	5430	6260	8685	7210	7618	7893	8151	8460	8685
2131	2730	3185	4185	5435	6265	8690	7215	7623	7898	8156	8465	8690
2134	2735	3190	4190	5440	6270	8695	7220	7628	7903	8161	8470	8695
2137	2740	3195	4195	5445	6275	8700	7225	7633	7908	8166	8475	8700
2140	2745	3200	4200	5450	6280	8705	7230	7638	7913	8171	8480	8705
2143	2750	3205	4205	5455	6285	8710	7235	7643	7918	8176	8485	8710
2146	2755	3210	4210	5460	6290	8715	7240	7648	7923	8181	8490	8715
2149	2760	3215	4215	5465	6295	8720	7245	7653	7928	8186	8495	8720
2152	2765	3220	4220	5470	6300	8725	7250	7658	7933	8191	8500	8725
2155	2770	3225	4225	5475	6305	8730	7255	7663	7938	8196	8505	8730
2158	2775	3230	4230	5480	6310	8735	7260	7668	7943	8201	8510	8735
2161	2780	3235	4235	5485	6315	8740	7265	7673	7948	8206	8515	8740
2164	2785	3240	4240	5490	6320	8745	7270	7678	7953	8211	8520	8745
2167	2790	3245	4245	5495	6325	8750	7275	7683	7958	8216	8525	8750
2170	2795	3250	4250	5500	6330	8755	7280	7688	7963	8221	8530	8755
2173	2800	3255	4255	5505	6335	8760	7285	7693	7968	8226	8535	8760
2176	2805	3260	4260	5510	6340	8765	7290	7698	7973	8231	8540	8765
2179	2810	3265	4265	5515	6345	8770	7295	7703	7978	8236	8545	8770
2182	2815	3270	4270	5520	6350	8775	7300	7708	7983	8241	8550	8775
2185	2820	3275	4275	5525	6355	8780	7305	7713	7988	8246	8555	8780
2188	2825	3280	4280	5530	6360	8785	7310	7718	7993	8251	8560	8785
2191	2830	3285	4285	5535	6365	8790	7315	7723	7998	8256	8565	8790
2194	2835	3290	4290	5540	6370	8795	7320	7728	8003	8261	8570	8795
2197	2840	3295	4295	5545	6375	8800	7325	7733	8008	8266	8575	8800
2200	2845	3300	4300	5550	6380	8805	7330	7738	8013	8271	8580	8805
2203	2850	3305	4305	5555	6385	8810	7335	7743	8018	8276	8585	8810
2206	2855	3310	4310	5560	6390	8815	7340	7748	8023	8281	8590	8815
2209	2860	3315	4315	5565	6395	8820	7345	7753	8028	8286	8595	8820
2212	2865	3320	4320	5570	6400	8825	7350	7758	8033	8291	8600	8825
2215	2870	3325	4325	5575	6405	8830	7355	7763	8038	8296	8605	8830
2218	2875	3330	4330	5580	6410	8835	7360	7768	8043	8301	8610	8835
2221	2880	3335	4335	5585	6415	8840	7365	7773	8048	8306	8615	8840
2224	2885	3340	4340	5590	6420	8845	7370	7778	8053	8311	8620	8845
2227	2890	3345	4345	5595	6425	8850	7375	7783	8058	8316	8625	8850
2230	2895	3350	4350	5600	6430	8855	7380	7788	8063	8321	8630	8855
2233	2900	3355	4355	5605	6435	8860	7385	7793	8068	8326	8635	8860
2236	2905	3360	4360	5610	6440	8865	7390	7798	8073	8331	8640	8865
2239	2910	3365	4365	5615	6445	8870	7395	7803	8078	8336	8645	8870
2242	2915	3370	4370	5620	6450	8875	7400	7808	8083	8341	8650	8875
2245	2920	3375	4375	5625	6455	8880	7405	7813	8088	8346	8655	8880
2248	2925	3380	4380	5630	6460	8885	7410	7818	8093	8351	8660	8885
2251	2930	3385	4385	5635	6465	8890	7415	7823	8098	8356	8665	8890
2254	2935	3390	4390	5640	6470	8895	7420	7828	8103	8361	8670	8895
2257	2940	3395	4395	5645	6475	8900	7425	7833	8108	8366	8675	8900
2260	2945	3400	4400	5650	6480	8905	7430	7838	8113	8371	8680	8905
2263	2950	3405	4405	5655	6485	8910	7435	7843	8118	8376	8685	8910
2266	2955	3410	4410	5660	6490	8915	7440	7848	8123	8381	8690	8915
2269	2960	3415	4415	5665	6495	8920	7445	7853	8128	8386	8695	8920
2272	2965	3420	4420	5670	6500	8925	7450	7858	8133	8391	8700	8925
2275	2970	3425	4425	5675	6505	8930	7455	7863	8138	8396	8705	8930
2278	2975	3430	4430	5680	6510	8935	7460	7868	8143	8401	8710	8935
2281	2980	3435	4435	5685	6515	8940	7465	7873	8148	8406	8715	8940
2284	2985	3440	4440	5690	6520	8945	7470	7878	8153	8411	8720	8945
2287	2990	3445	4445	5695	6525	8950	7475	7883	8158	8416	8725	8950
2290	2995	3450	4450	5700	6530	8955	7480	7888	8163	8421	8730	8955
2293	3000	3455	4455	5705	6535	8960	7485	7893	8168	8426	8735	8960
2296	3005	3460	4460	5710	6540	8965	7490	7898	8173	8431	8740	8965
2299	3010	3465	4465	5715	6545	8970	7495	7903	8178	8436	8745	8970
2302	301											

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham-Ads is the 20th of the second month preceding publication date.

(6) A special rate of 7¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested signature and address be printed plainly. Typewritten copy preferred but handwritten signature must accompany all authorized advertising.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ—Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. WBCO, Radio, Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9VIV, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan. Tel. NOrmandy 5-8202.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC-1, R5/ARN-7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

ATTENTION Mobiles! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, \$45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, \$65.00. Good condition. H. A. Zimmerman Jr., K2PAT, 115 Willow St., Brooklyn 1, N. Y. Ulster 2-3472.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lyco Master Mobile, Morrow, National and other ham gear. H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Tulsa, Bendix equipment, test sets, dynamometers, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel. LExington 2-6254.

DUPERS Notice! Save money! Save Time! Free info. DX QSL Coop. Box 5938, Kansas City 11, Mo.

MULTI-BRAND Antenna, 80-40-20-15-10, \$19.95. Patented. Send stamp for information. Latin Radio Laboratories, Owensboro, Ky. SAN FRANCISCO and vicinity. Communication receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Associated Electronics, 167 So. Livermore, Livermore, Calif. W6KF, Skipper.

RECEIVERS: Repaired and aligned by competent engineers, using factory standard instruments. Authorized Factory Service Station for Collins, Hallicrafters, Hammarlund, National. Our twenty-first year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

VACATIONS. Ham with my equipment, modern housekeeping cabins, American plan. Big McKenzie Lake, Spooner, Wis. Tony Martorano, W2VZC.

WANTED: ARC-1, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788, O-17/ART13 LFO and other surplus. Advise what you have and price. Ritter, W4VHG, Box 5878, Bethesda, Md.

SCHEMATIC diagrams ARC-5 80-40 meter rcvrs and xmitters, 25¢ each or trade. S. Consalvo, 4905 Roanoke Drive, Washington 21, D. C.

RADIO magazines. Buy, sell or trade. Bob Farmer, Plainview, Texas.

CASH Paid! Sell your surplus electronic tubes. Want unused, clean transmitting, special purpose, receiving, TV types, magnetrons, klystrons, broadbands, etc. Also want military, and commercial lab test and communications gear. We swap, too, for tubes or choice equipment. Send specific details in first letter. For a fair deal write, wire or telephone: Barry Electronics, 512 Broadway, New York 12, N. Y. Tel. Walker 5-7000.

QSL'S? SWLS? Finest and largest variety samples, 25¢ (refunded). Callahan (Summer issue), \$4.50. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

QSL'S-SWLS. Meade W0KXL, 1507 Central Avenue, Kansas City, Kans.

QSL'S-SWLS. 100, \$2.85 up. Samples 10¢. Griffith, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

DELUXE QSL'S—Petry, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSL'S "Brownie," W1CJL, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSL'S-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSL'S. Twenty exclusive designs in 3 colors. Rush \$3 for 100 or \$3 for 200 and get surprise of your life. 48 hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

QSL'S—All kinds and prices, samples 10¢ fast service. DX Card Co., Kulik St., Clifton, N. J. GR 3-4779.

QSL's that bring returns! Samples 25¢ (deductible). C. Fritz, 1213 Briargate, Joliet, Ill.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Watertown, Conn.

QSL'S. Neat, Attractive. Samples 10¢. Woody's, Box 164, Asher Sta., Little Rock, Ark.

QSL'S. Taprint, Union, Miss.

QSL'S. Samples 10¢. H. J. Snyder, 398 Washington, Peru, Ind.

QSL'S. Reasonable, 3 weeks delivery. Samples 10 cents (coin). Dick, K6GJM, 10358 E. Olive, Temple City, Calif.

QSL'S. Sharp! 200 one color, glossy, \$4.75; Multi-color samples dime. K9DAS QSL Factory, Edward Green & Sons, Box 197, Frankfort, Ind.

QSL'S. SWLS, Samples dime. Backus, 703 Cumberland St., Richmond, Va.

QSL'S. Cartoons, colors, something different. Samples 15¢. Chris, W9PFA, 365 Terra Cotta, Crystal Lake, Ill.

FINEST QSL'S! Lowest prices. Samples. WAT, Box 128, Brecksville, Ohio.

QSL'S. Glossy, two colors, samples 10¢ (refunded). 200 cards \$3.75. WIGKH Press, Candlevier Ridge, Danbury 18, Conn.

INDIVIDUALLY Designed QSL'S. Send idea. Sketches, prices, returned for approval. Also stock samples, dime, St. Louis Amateur Radio Club, 1123 Washington Ave., St. Louis, Mo.

QSL'S. Reasonable, 3 Week Delivery. Samples dime (coin). Dick, K6GJM, Box 294, Temple City, Calif.

QSL'S. Samples, dime. Printer, Corwith, Iowa.

NOVICES! General! QSL'S, SWLS, VHF's, XYL-OMS, (samples approximately .09), 6 reasonably priced "tacked-up-kind" different, comic, sedate, diversified, glorious, prototypal, infrequent, unparalleled, extraordinary, unprecedented, dissimilar (wow!), Rogers, K0AAB, 737 Lincoln Ave., Saint Paul 5, Minn.

QSL'S. California only. Daugh, K6JCN, Box 66009, Mar Vista 66, Calif.

QSL'S. High gloss. Free samples. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

QSL'S of distinction! Three colors & up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

QSL'S. Glossy. Samples 10¢. W1OLU Press, 30 Magoun, Medford, Mass.

SEND \$1.00 for 50 QSL'S-SWLS. Glossy cards. Samples free. Bolles, Box 9007, Austin 17, Texas.

QSL'S samples, dime. Gay Krenz, Fall Creek, Wis.

RUBBER Stamps for QSL'S. Sample imprints. C. W. Hamm, W9WY, 342 N. 3rd St., Milwaukee, Wis.

QSL'S. Cartoons, colors, something different. Samples 15¢. Chris, W9PFA, 365 Terra Cotta, Crystal Lake, Ill.

QSL Special. Free Sample. Nat Stinnette, W4AYV, P. O. Box 155, Umatilla, Fla.

QSL'S. SWLS. Samples dime. Backus, 703 Cumberland St., Richmond, Va.

RUSPRINT QSL'S-SWLS. 1¢ each. Samples 10¢. Box 7507, Kansas City 16, Mo.

SEND for this month's standout listings of Reconditioned Equipment. Also request our new "1957 Amateur Catalog. We feature all leading brands and promise you an attractive deal always regardless of your needs or budget. Check our offer first. We deal quickly, easily and always on a personal basis. Stan Burghardt, W8BV, Burghardt Radio Supply, Watertown, S. Dak.

MEDICAL Ham! Trade Beck-Lee Model E electrocardiograph for a good Collins receiver. T. R. Jacobson, M.D., W8SLG, Hot Springs, S. Dak.

SALE: QSL metal file boxes with State and DX index. Initialed with call letters. \$3.00 each. Gerold Kaminski, W8OQR, 2814 Albion St., Toledo, Ohio.

TECHNICAL Manuals TM11-273, 120 pages covering BC-312 receivers and BC-191 transmitters, \$2.50. ID-60/APA-10 Panadapter manuals, \$2.75. Both postpaid in U.S.A. Electronicraft, Bensenville, N. Y.

FOR Sale: Harvey-Wells TBSS50 Bandmaster Deluxe transmitter, never used, plus schematic, \$110. Robert Hildebrand, 501 Washington Ave., Greenville, Ohio.

TO 75% discount. Brand name parts, new. Meters, switches, relays, tubes, resistors, condensers, others. For complete listing send 50¢ coin, refundable. Ensell, 1134 Bingham Ave., Warren, Ohio.

HALLCRAFTERS. Central Electronics ham gear—others. Swartzlander Radio Limited, Fremont, Ohio. Call Jerry, W8EPI or write.

RUBBER Stamps of all kinds. Special, Nickel-plated self-inking pocket stamp, \$1.40. Name QTH and Call. Howard Rappie, W8VRB, 401 N. 2nd St., Humboldt, Iowa.

COLLINS 75A1 in perfect condition, \$260, including speaker. Walter A. Duke, Radio Station WDBL, Springfield, Tenn.

HAMFEST June 9th Southwest from Ottawa, Ill. on Illinois Route 71 at the La Salle County 4-H Home and Picnic Area. Advance registrations may be mailed not later than June 1 to Starved Rock Radio Club, RFD 2, Utica, Illinois. Advance registration \$1.00; \$1.50 at the gate. A nice all-day affair for Midwest Hams and their families.

FOR Sale: Hallcrafters S-85 with Heath Q multiplier and Hallcrafters S-meter, \$100; Homebrew xmitter AM/CW 90 watt (\$10 in parts) \$90; Kw. xmitter, will sell cheap. Cash. Anderson, 710 West Oak, Deale City, Kans.

QST September 1937 thru December 1950, complete run except March 1944. Best offer takes, WBCAW, K. H. Stanger 1840 South Milwaukee St., Denver, Col.

SELL: Adventurer. Make offer. W5KKB.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, ARC-1, ARC-3, ART-13. All types of test or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallcrafters, Hammarlund, National B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom, WIAFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048. Stores: 60 Spring St., Newport, R. I.; 44 Canal, Boston, Mass.

WANTED: Your new, used and unused equipment! Get all the cash when you sell to Harry, W0ATC! We pay most for E-348, BC-224, R-5/ARN-7, ART-13, BC-788C, APN-9, all types of Test and Communication Equipment. Alvarado Industries, Box 151-QS, North Hollywood, Calif.

HALLICRAFTERS SC-40A modified for 23/60 cycle operation with jack for tape recorder pickup, in A-1 cond., \$100. Write to: Ralph, 112 Marquette Ave., Downsview, Ont., Can., or Phone Toronto ST 8-8589.

FOR Sale: 450 watt rig, open 6 ft. Bud rack, screened and TVI suppressed; 6P 812A's, mod. 1000; 2500/2500; 100/1250 p.p.s. 800/600 p.p.s. — 400/300 p.p.s. Worth in parts: \$300. Price: \$125. Take it away. 459A with p.s. \$60; Sonar XE10, \$15. Many parts and xfrms. Phone or write to: Ulrich, 76-19 Adwell Ave., Elmhurst 73, L. I., N. Y. Tel. DE 5-3185 after 7 p.m.

SELL: Trade-Camera: Super Ionta B.r., Tessa (f2.8 coated, sync. compur, case, shade, filters, like new. Want: Viking Ranger, Carl Rainbolt, W9VZF, Cordon, Ind.

FOR Sale: Johnson Adventurer, \$50. Bell model 225G Hi-Fi amp, \$70; Harmon-King Hi-Fi FM tuner, \$65; two and six tube, 500 watts, \$50; H.W. TBSSOC Hi-Z imp. VFO and pwr sup, \$15; Hallcrafters S-53A, \$60; Heath V-72 VTMV new, \$ & t., \$35; \$450 takes all. Write: W3BFC, 334 Lambeth Rd., Balto. 28, Md.

WANTED: Power transformer 2600 volts at 300 to 500 MA with center tap connection. K4C1E, Charlotte, Tenn.

FOR Sale: Three (3) Vocoline Transceivers, Citizen Band, used very little. Complete with outside and inside antennas, microphones, etc. \$150.

COLLINS 30K-1, complete, in new cond., Manual for SSB conversion, \$800. F.o.b. Pittsfield, N. H. WITHM, RFD #1, A. J. Crizzolari.

SELL: New AF-67 unused, \$150. WITHNB, 614 W. Shaft, North Adams, Mass.

WANTED: Collins POC unit. State condition and price in your reply. Ray Feeney, W6CMY, 6719 Main Ave., Orangevale, Calif.

FOR Sale: Onan power plant, 115 V., AC, 60 cycle, 500 watts, in original case, \$30. "Matchbox" 250 watt, new \$35; power supply, 2500 V. DC at 350 MA, new parts, \$50; Super Six converter, in exc. cond., \$30; PE103, \$10; Super Pwr supply, excl., \$25; Heath Q multiplier, \$8; Heath VFO, \$18. W5VKO, Jas. W. Craig, Jr., 2121 17th St., Lake Charles, La.

SELL: Knight 50 watt xmitter, excellent cond., de-bugged. Only \$35. Write to Dough MacPherson, 10 Brookside Dr., Apt. 2F, Greenwich, Conn.

GONSET Communicator I, in exc. cond., cash & carry, \$130. K2BBC, Ray Kreiman, 37 Nagle Ave., N. Y. N. Y.

SELL: DX-35, late one, like new cond., Local sale. Pick up, \$50. W. Trotter, KNSITX, 1502 Nearn St., Blytheville, Ark.

AMATEUR Paradise Vacation Spot! Livingstone Lodge and log cabins, Mascoma Lake, Enfield, N. H. 100 acres, eleven buildings, Main Dining Lodge, swimming, boats, sports, skiing, Dartmouth Golf, churches, LaSalle shrine, fishing, 28th year. Family groups, 75 & 40 meter rig in lobby. American Plan, \$40 per week. Children half price. Booklet on request. At Livingstone, W2QPN, 12-01 Ellis Ave., Fair Lawn, N. J.

MASTER Mechanic 1200 watt generator, 2 1/2 H.P.; Briggs Stratton gas engine, 115 V. AC, at 60 cycles output, \$150; 100 watt, 2 meter xmitter, panel mounted, metered, built-in V.F.O., bias and filia. supply AX9003 final, enclosed plate lines, \$75; Gonset 6 Meter beam, \$12. Quick assembly, 6M beam for portable use, \$25. S. Savage, W6ABN, 414 E. 55th St., Long Beach, Calif.

WANTED: 15 Meter coil for HRO-60, in gud cond., State price. W2LAP.

SELL: Collins KWS-1, complete, and 75A4, used 2 hours; Johnson rotor 10-15-20. Best bid, W2MWW.

VIKING Ranger: In brand new cond., push-to-talk, \$195; two (2) ARC-4 transceivers with schematic for 7-meter conversion, complete with 2 power supply kits, \$65. Harold Franta, K9GCP, Wabasso Minn.

QUAD Builders: Bambo poles 15 ft. x 1 1/4" to 1 1/2". \$1.25 each. Cash with order. Shipping express collect. Wholesale inquiries invited. Redrum Fabrics, 64 Stanhope St., Boston 16, Mass., W1WTF.

SELL: Signal Sentry, Never used. With tubes, \$10.00. O. H. Ketchum, 10125 Flora Vista Blvd., Bellflower, Calif.

MOBILE SSB transmitter, built by W9WJL per March 1956 QST, input 12 volts, in exc. cond., \$60. Art Johnson, K2PZA, 29 Boone St., Bethpage, L. I., N. Y.

CLEANING House! Sell complete ham transmitter 1/2 KW. Whole or separate units, enclosed steel relay rack, tubes, etc. Tell me what you need and how much you think it's worth. All letters answered. W. F. Ashbury, W2GPO, 61 E. Main St., Huntington, N. Y.

GONSET Communicator II (deluxe) and linear amplifier for sale. In excellent cond., Must sell to go back to school. Write Buck Marler, K4BBA, 2701 Reynolds Rd., Winston-Salem, N. C.

SALE: SX282, in perf. cond., \$150 or best offer. All letters answered. WNTGXC, 1650 Downingtown Ave., Salt Lake City 5, Utah.

WANTED: Instruction manual for National HRO F/197 revr. G. R. Payson, 73 Tremont St., Boston 8, Mass.

20 Meter Subraco mobile transmitter 30-40 watt Class B modulated with Gonset bandspread revr, mike and antenna. Best offer F.O.B. Detroit accepted. W8BP, 3156 Weatherlane Lane, Birmingham, Mich.

ETCHED-Circuit material, supplies, instructions, free catalog. Etched circuits. P.O. Box 2582, South Bend 14, Ind.

SURPLUS BC654A xmitter/revr, complete with PC-103 dynamotor, cables and spare tubes, \$49.50; 5 Marker beacon revr, 75 Mc., \$2.95 ea. W7KPO, 1945 N. E. 13th Ave., Portland, Ore.

SALE Or swap: Have Sams Photofast folders 1297 thru 338, few assorted 239 thru 295. Total of 51 folders. Also Eico model 944 Flyback and yoke tester. All in mint condition. Want Ham gear or parts of any type. Jack Nichols, 1403 Mt. Washington Rd., Ardmore, Ore.

FOR Sale: Navy walkie-talkies, new batteries 3725 Kc, \$65 both; Johnson Viking Mobile xmitter with Johnson VFO, factory-wired, A-1, \$105; Biddle megger insulation tester O-100 mega type Scintilla, \$35; Tectra 2 meter converter, \$25 with pwr sup, 3-6 VDC 600 volt 155 mA; 1 Tetrax freq. std., \$10; 1-4548 1-6 Mc 6 volt tubes, \$6; 3" scope with X, Y, Z axis control, same as Waterman S14. Best offer 1-LM13 with modulation, chart and pwr sup, chart not cal. \$30; 15-50,000 ohm 200 watt bleeders \$2.00 each. Send for list tubes, relays small parts. Nelson Stover, W3BBV, 1357 Hill St., York, Pa.

SELL: Viking II, Viking VFO, NC-125, best offer over \$300. W0RIB, 2123 Birch Ave., Rapid City, So. Dakota.

FOR Sale: Four AG-7-807 xmitters, only need one. Write for info. No reasonable offer refused. With or without pwr. supply. Anderson, 8356 Curzon Ave., Cincinnati 16, Ohio. Locals phone PO 1-6935.

WANT Low-powered 10 meter mobile rig for 12-volt operation. Dave Smith, 54 Butler Rd., Scarsdale, N. Y. Tel SC 3-4083.

WANTED: Choke 20 Henries smoothing 800 MA 5000V, insulation, W1BB.

RANGER \$175, Matchbox \$35, Signal Sentry, \$12.50; Johnson I.F. filter, \$10; Dow 115 VAC coax relay, \$10; Tectra 2 meter converter \$32.50; 2 meter Communicator II 6 volt with crystals, \$175. All in condition. W2K1T, 29 Wymor Rd., Scarsdale, N. Y.

MOBILE Elmac transmitter AFV and PS-2V Elmac 110 volt power supply or fixed station operation including push-to-talk mike: \$145.00. Elmac PMR6A revr w/pwr supply, \$85.00 and 32V3 for sale plus shipping. H. M. Riddle, 3106 Sherbrooke, Toledo 6, Ohio.

SELL: Brand new pair of 4X150's and pair of new 4X150's, \$30 per pair, also 600 volt 265 mil. 6 volt dynamotor, \$10. George Tate, W4AIS, Artillery Rd., Taylors, S. C.

CADILLAC 1938, Worth \$150. Will trade for xmitter or revr. Jim Windock, K9CQ, 228 W. Marshall, Belvidere, Ill.

SELL: 6BA6 prescaler, LO-40 ant. tuner, Johnson 100 Kc axial calibr., 5V3GT, 300V DC 50 MA, access supply, all on 7 x 12 chassis \$45; dual pwr. sup. — 450VDC 3A, 1250V DC 2A, \$70; push-to-talk grid modulator, \$18. Ramon Britt, W4GIM, 819 East 3th, Lumberton, N. C.

SIGNAL Generators wanted: TS-497, TS-621, SG-3/U, TS-437, TS-510, TS-588, TS-608, etc. TS-186 frequency meters, AN/APR-4 tuning unit, other "APR" receivers, ARC-3, other surplus, also Hewlett-Packard and other laboratory quality equipment. Weston, etc.; instruments; technical manuals for photo cash or swap for Zenith transceivers portables, etc. New TG-34A Quick-electric tape code practice sets with manual, \$24.95; new BC-645's with original and Citizen's Band conversion schematics, data, \$24.95. Engineering Associates, 426 Patterson Rd., Dayton 9, Ohio.

TRADE HQ-29X w/apkr and BC-221 complete for nice KW final, pi-network, shielded, TVI suppressed. K4HFX, H. L. Parrish, Jr., RFD 4, Hickory, N. C.

SELL: 75A4 rectifier with vernier knob, 3 Kc filter, latest factory modifications and matching speaker, \$530; Johnson Valiant xmitter, factory-wired, with Johnson low-pass TV filter, \$160; B&W Mod. 650 Matchmaster, \$35; CDR Mod. AR-22 rotor, \$22. All less than six months old and used less than 25 hours. F.o.b. Phoenix, Ariz. Allan Moser, W7DEI, 36 N. 6th Ave., Phoenix, Ariz.

SWAP or sell: Dumont 208, 2 new RCA-W088A, cost \$179.50; 2 new RCA W056A, cost \$289.50; scopes and an Argus C-4 camera. Want ham equipment: DX-100, Viking, etc. Send offers to: T. F. Waters, 140 West Gilpin Ave., Norfolk, Va.

WANTED: Highest prices paid for ART-13, ARC-1, BC-788, BC610, BC348, ARC-3, BC312, BC342 and other military or aeronautical surplus. Name your price. We pay freight and C.O.D. James S. Spravey, Inc., 4008 Hampden Lane, Bethesda, Md.

WANTED: Hallcrafters Sky Buddy. State condition and price. All letters answered. K4BN1.

FOR Sale or Trade: NC183D, w/apkr, \$295; RME VHF211, \$80; BC221H, w/a.c. supply, \$40; RME DB-23 preselector (1 yr. old, works v. fb), \$35; Heath WAP-2 pre-amp, in original cart., \$17.50; Heath Q multiplier, \$9; Hallcrafters R-46 apr., \$15; 2 meter walkie-talkie \$5; w/batteries, \$7; Johnson SWR bridge, w/0-1 MA meter, \$7; International Crystals 6M converter w/t, \$10. Or swap for 75A3 or GPR-50. Dick Wilson, K6LRN, 1259 15th Ave., San Francisco 22, Cal.

VIKING II For sale, factory-wired, no changes. \$225. Charles Horn, W0H1J, Hillcrest W-321, Iowa City, Iowa.

FOR Sale: Globe Scout 65A, \$85. WRL Mod. 611 VFO, \$35; both factory wired and in excellent cond.; Health Q multiplier, \$5. K. S. Bowron, Box 866, Umatilla, Fla.

TWO BC-611 handle-talkies, in gud cond. Both for \$100. W6FBH. VTM, NRI, gud cond., a.c. operated, ac-dec. 3-600, 15-150 MA, 10 ohms-100 meg., with instruction, experiment books. First \$18 takes. M. Windob, 4920 S. Parkway, Chicago 15, Ill.

WANTED: Used receivers and transmitters. Will pay cash or trade, 10% down with up to 24 months to pay. In stock: New 75A4's, KWS-1's, KWM-1 SSB mobile transceiver, Johnson, B&W, National, Hallcrafters, Elmac, Hammarlund, Gonset, Central Electronics, Money, Hi-Gain and Gotham Beams. Write for list of bargains in reconditioned receivers and transmitters with new guarantee. Shipped on approval. Write Ken, W0ZCN, or Glen, W0ZKD, your nearest deal. Ken-Eladio Radio Supply Co., 428 Central Ave., Ft. Dodge, Iowa.

VIKING Pacemaker, \$395; also ATC I Autotune transmitter using 813 final 811 modulator, rugged VFO and exciter stages, \$175 complete, or \$150 less 110 VAC power supply. PE103, \$18. Will not ship. William Trezak, W3TXX, 7224 Schoyer Ave., Pittsburgh 18, Pa.

\$38, \$35; VHF15A, \$40, 7 in. T.V., \$20, 807's, \$1; 829B, \$7, \$10, \$5, \$13, \$5. Will send list on other gear. Vic Miller, VE3AJT, Box 88, Bowmanville, Ont., Can.

FOR Sale: BC-474A portable xmitter, rcvr. National NC183D, 100 watt homemade xmitter. Write to W5DTP, Box 1050, Aliso, Texas.

FOR Sale: Homebuilt knotty pine ham shack, 3 bedrooms 35 ft. steel tower, 20 meter beam and all Collins equipment on 1/4 acre lot. W2MRZ, W. Kaufman, 11 Farm Lane, Hicksville, L. I., N. Y.

FOR Sale: Kilowatt phone transmitter, 84" deluxe cabinet VFO PP 810s, 5 power supplies, 1 scope HDVL coils, separate speech or public address amp, antenna tuner, no junk. Complete, \$275, W2AOV, McGrew, R.F.D. 1, Huntington, N. Y. Tel. Hamilton 7-7184.

CASH & Carry: Globe King 500 per. \$450, with Heath VFO; Teletype Mod. 26, table, paper, \$75; F.R.A. converter 455 Kc. B. \$40. W2PAT converter, \$20. BC22AX with 12/24 volt. p.a. \$20. W2DVD, 20 Poplar Ave., Deal, N. J.

HRO-60 Deluxe receiver in rack with compartment for 10 coils. Speaker in top center, first class working cond. and shape. A, B, C, D coils, xtal calibrator, \$335. Buyer must come and see it. K2ZAF, Drexler, 3 Lee Dr., So. Farmingdale, L. I., N. Y. Tel. Chapel 9-8200.

REGENCY AT-C1 converter wanted, used. K2ZQD, LO 7-0986, Box 27, New York 5, N. Y.

FOR Sale: Beautiful Harvey-Wells TBS50D, with matching APS50 supply, antenna, cables, etc. 200 watt antenna tuner and mike. Like new cond., \$99.50. KN2VZN/0, 4948 Evans Street, Omaha, Nebraska, PR 4738.

SELL or swap: BC224 receiver, no power supply. \$45; Gonset 3-30 converter, \$25; Mobile whip with 40 M. coil, \$10. W9RMM, 4 E. 11th St., Chicago 29, Ill.

TWO 4D32 tubes, guaranteed new, \$14 each. W9ARI.

WANTED: BC-221 frequency meter with calibration chart, instruction booklet. Preferably AC converted. W8GAS, 1821 North Park Boulevard, Cleveland Heights 6, Ohio.

"FIG-In-A-Poke"? Not if you visit Ham Headquarters, USA, and take your choice from the hundreds of "like new" bargains in the world-famous Harrison Trade-In Center! (SS photographs, pp 137, March QST and p. 133 April QST). Greater values, because tremendous turnover means lower overhead! Terms, Trades BCNU. Bill Harrison, W2AFA, 225 Greenwich St., New York City.

CASH & Carry: Globe King 500A \$450; WRL VFO, \$40; B&W low pass filter \$8; Harvey-Wells Z-match antenna coupler \$60; Johnson signal sender \$12; Bug \$10; xtal mike \$6; NC300 receiver \$300; xtal calibrator for NC300 \$12; speaker \$10; Heath AM impedance bridge \$10; 3 element triband beam \$45, with prop pitch rotator, xmr, 100 ft. six conductor cable \$20 more, and with 90 ft. RG8/U another \$8; a pair of unused selsyns \$5. All excellent condition. 20% discount if you buy it all. W1VPI, Wendell Turner, 742 Hickory Ave., Bel Air, Maryland. Phone Bel Air 1075-J.

COLLINS 32V3 transmitter, one owner \$525. Just completely overhauled by Collins, never used since. F.O.B. Johnny Fearon, WAWKP, 4165 Club Drive, N.E., Atlanta, Ga.

FOR Sale: Two receivers in perfect condition, SX-43 with 8" speaker in housing, \$98 and BC-148R with built-in power supply, \$85. F.O.B. Chicago. W9RIF, A. F. D'Orto, 7917 Cortland Parkway, Elmwood Park, Ill.

WANTED: Gonset "Monitone", perfect cond. Rowles, WIUDA, R.F.D. 2, Pittsfield, N. H.

MULTIBAND Antenna traps 80 thru 10. Weather-sealed, 52 or 72 ohm feed, 1 Kw. \$8.00 per postage. Send name for literature. SAR Electronics, 293 N. Evergreen, Kankakee, Ill.

FOR Sale: Tubes, brand new RCA 813's, \$7.50; 810's, \$8.00; 812A's, \$3.50; 829B's, \$7.00; 201A's, \$2.00; 5692, \$3.50; 5654, 6AK5W, \$1.00; 3C33, \$3.50; 1B28, \$3.50; 2C39, \$5.00; 5R4WG, \$1.00; 6BA6, \$6; Bendix TA-12 transmitter, unmodified, makes swell all-band rig, \$35; transformer input 120, output 24 volts at 80 amps, \$25. Step-down transformer 110 volts down to 12 volts at 4 amps, \$15; plate transformer 115 volts, secondary 7500 volt c.t. at 89 Ma.; matching transformer 10,000 ohms to 600 ohms, \$3.50; All guaranteed. Can ship C.O.D. Bill Slep, W4FHY, Ellenton, Fla.

WIFE Sez Clean "Em Out! Lecce-Neville 6 volt 80 amp. alternator, regulator, rectifier slightly used \$40; 522 rcvr., \$10; 1 V. Thoradson 500 Ma. 200 v. xfrmr. \$20; 3-30 Gonset converter, \$20; used 813 pair \$15; 100TH pair \$12; 205 pair, \$10; VT122A pair \$8.00; HD20A pair, \$10.00; QST run, 1937 to 1956, \$2.40 per W. - F. E. steel xmitter cabinet, used, with shelves and panels, terrific buy, \$25! Stancor mobile 30-watt xmitter less modulator transformer, works 75 and 10 meters, \$15.6 volt Elicor 600 volt dynamotor, 200 Ma. factory warranty, \$30. Write to B. H. Sandley, W5FQD, 30, Franklin, Houston, Texas.

SWAP: Brand new Signal Corp transmitter-receiver #669-D, never used, for HQ100 Hammarlund rcvr or equal. C. H. Schuele, 318 Kiebsing St., Columbia, Ill.

KWS-1 and 75A-4 with mike output meter and matching speaker, \$2195. GPR-90 receiver, \$345. W9NHF.

SELL: DX-55 xmitter, \$52 and S-86 rcvr, \$79. Both are in excellent cond. A real bargain! Lou van Leeuwen, K2VNR, 99-32 66th Road, Forest Hills, L. I., N. Y.

TRADE Pair Devry 35 mm motion picture projectors complete with are lamps and rectifiers in first class condition, original cost: \$500.00 for Collins or Johnson Kilowatt. WAAKG, J. S. Yerby, 1621 S. Parkway East, Memphis, Tenn.

FOR Sale: B&W 5100B, Millen grid dip meter, Millen SWR bridge, E-V mobile mike, Master Mobile Micro-Z match, Sinar LP filter, mobile power supply complete, Collins speaker, Drake L. P. 300 ohm, R-175A choke, Drake bandpass filter, DZZ antenna traps, Hi-Q Davis 500 mobile coil, 75M, fibreglass antenna base section, 500 w. Johnson & B&W coils, twin V noise squelch, wire & B-W - F. E. switch, Gonset Communicator II, G.I. tape-disc recording unit, UTC, S54, 62, 46, Merit P146, Regency TV voltage booster. Everything in a like new cond. Make reasonable offers. R. R. Lamb, 1219 Yardley Rd., Morrisville, Penna.

DON'T Cry if you're having code trouble. Shortcut methods are pure fantasy. We teach the association method, approved the world over, but unavailable elsewhere. Novice course, basic instruction plus practice material to 8 WPM. \$5.95. Advanced course, practice material to 18 WPM. \$4.95. Combined \$9.95. Magnetic recording tape, 7" dual track, 3" IPS. Tape code, Box 31-E, Langhorne, Penna.

FOR Sale: SX96 with matching speaker. Receiver can not be told from new one. Will deliver within 100 miles upon receipt of small deposit. K2JVL, 1 Lizette St., Auburn, N. Y.

FOR Sale: Complete mobile station, Multi-Elmac AF-67 Transmitter, Jambo power supply, 200 watt antenna, 200 watt converter, relay, heavy duty multi-band antenna; microphone. All in excellent cond. Write for details. W9PWW, 821 Waveland Rd., Lake Forest, Ill.

WANTED: HRO60 and DX100. Jim Del Guercio, W2URJ, 9 Curve St., Bedford, Mass.

LIKE New 25 watt 75 meter phone mobile transmitter, 6v. dual Vibrapak, new mike and coaxial cable, everything \$40; 6v. 425v 375 Ma., dynamotor, \$10; dual Vibrapak, 6v. 400v/120 Ma., \$12; Single 6 v. 400v/80 Ma., \$7; following gear new or like new: AT-1 modulator, \$8.00; 40 and 25 watt modulators with speech, \$18 and \$15 respectively. 1000v./200 Ma. supply, \$15; 750v./200 Ma., \$12; SCR-522 xmitter supply, \$17; Johnson Adventurer modulator, \$18; 1500-0-1500v./200 Ma. unshielded transformer, \$12. W8QKU, 2748 Meade St., Detroit 12, Mich.

BARGAINS: With new guarantee: HT-9 \$99.00; HT-20 xmitter, \$275.00; Collins 32V \$275.00; Collins 32V \$495.00; Collins 32RA8 \$79.00; Elmac PMR6A \$79.00; Morrow P-18 & P-8 \$49.00; Morrow 3BR \$24.95; Morrow SBR \$49.50; Elicor 600 \$69.00; Elicor TR-1 \$139.00; Elicor TR-75T \$25.00; Collins 75A1 \$99.00; Viking 1-8 \$99.00; S & W Molex \$59.00; Elmac A54 \$99.00; Gonset 3-30 \$29.95; Gonset Tri-band \$24.50; 4024 VFO Preamp \$45.00; Sonar SRT-120 \$99.00; Globe Trotter \$34.50; Scout 40A \$59.00; Globe Champ 165 \$149.00; Globe King 275 \$199.00; Globe King 400B \$125.00; 100 HRO coils \$16.00. Free trial. Terms financed by Leo, W8GFO. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

SALE: New Pacemaker. Will take in trade a good Ranger, or Valiant 188, or a new, late model gear. Want: Millen G.D.O., pr. 4-250A's, 4-400A's and a variable vacuum capacitor. Write Mike Adamson, 4060 So. Penn St., Englewood, Colo.

FOR Sale: Lynco 362 VFO, \$25; Globe Scout 40A, \$50; 3-element Omega 15m. beam, \$30. Will sell for best offer over \$85. W7VJM, 1500 First St., Palmdale, Wash.

WANTED: For cash, Kenyon surplus transformers No. S-13483, 115v. AC pri. 3200v. AC sec. W4MDQ.

COLLINS 310B-3 exciter, complete. Like new, spare tubes, instruction book, antenna tuner, etc. \$150. Walter Babcock, W2RXW, 405 Sayles St., Omaha, Neb.

HI-Powered final p.p. AE27 in 38 in. enclosed relay rack with dolly B&W TVL coils and Thoradson HV power supply 1500v. at 3A with relay. No surplus. \$120. F.O.B. Paramus, N. J. \$110 cash & carry deal. Viking 1 with 566A in pwr supp. and Heathkit VFO, \$165. Pryor, W2DHR, 102 Norman Way, Paramus, N. J. Tel. COlfax 1-8655.

WANTED: Shortwave & Communications receivers. New or used. All types electronic tubes. Highest cash prices paid. Write or phone: North Radio Co., 92 Cortland St., N. Y. 7, N. Y.

TRADE: VM Binaural tape recorder with staggered heads. Two amplifiers and additional matching speaker cabinet, (4 speakers total), \$100 worth of prerecorded binaural tapes and VM recording machine. Want 12V xmitter or 75A receiver or Camera Baudalux (Germany), 120 film. Schneider Kreuznach Kodakson 1.4/105 MM lens, with case, nearly new cond. For what have you in commercial and ham gear? All inquiries answered. W8VVG, C. L'Esperance, 826 Lane St., Kalamazoo, Mich.

SELL: 250 watt mod. xfrmr, \$12; 11 by, 500 Ma. choke, \$10; 8 add 2500V DC new G-E capacitor, \$6; Heath 5" oscilloscope, \$20; Johnson SWR bridge, \$4; Baluns (pr.) \$4; TVL coils, 80-40, \$2 each. K2HFC, Robert Kohnstein, 38 Forest Ave. Saratoga Springs, N. Y.

SALE: Elmac A54H 12 volt filaments, 40 meter coil installed, in gud cond. \$70; 30 ft. steel tower. Windmill type. Brand new assembled. Rugged. Weight 404 lbs. \$80. K. B. Crowell, W3AJQ, 420 Rosemont Ave., Drexel Hill, Pa.

WANTED: "Calling CQ" by Clinton DeSoto. Will pay well for copy in good condition. Contact WPTJC, Verkes Observatory, Williams Bay, Wisconsin.

FOR Sale: Collins 75A3 mechanical filter type F455B-08. Price: \$15. WIDBS, John Savonia, 11 Dwight Court, New Britain, Conn.

CANADIANS: For sale BC-348J converted with power supply and S-meter, \$65. VE3BJS, Box 45, Farry Sound, Ont., Can.

COLLINS 511-2 with factory installed 3 and 6 Kc. mechanical filters. Has new Collins tuning knob. Excellent cond. Terms serviced and realigned at factory past month. Will not ship because of possible damage. Must be picked up. S. P. Sufin, 83 Lookout Circle, Larchmont, N. Y.

WANTED: A good used DX100. State price and condition. E. R. Arms, W9PBL, RR #1, Harrisburg, Ill.

WANTED: Late Model 75A3 or 75A4 in gud cond. Give lowest price. Full particulars and serial number in your first letter please. W3KA, 10406 Inasley, Silver Spring, Md.

GETTING out of radio. Test equipment, receiving tubes and components for sale. Send stamp for list. Cecil Baumgartner, Box 343, Mills, Pa.

VIKING II push-to-talk factory wired in excellent cond. First \$200; Viking VFO, first \$30; push-to-talk stand with D-104 mike, \$14; Sonar low pass filter, \$10; 52 or 72 ohm Bud 100 Kc. osc. self-powered, \$12; 10 meter RVR 30 db gain, \$14. Pair baluns mounted with Bittum, \$5. All terms answered. W2DRD, F. Greenbaum, 2123 Cruger Ave., Bronx 62, N. Y.

SELL: Johnson Ranger, used less than 50 hours with E-V 664 mike and stand, \$250; three Elmac 4-250-A at \$15 each; KW power supply components \$25; Garrard RC80 with base and G-E cartridge with 001 diamond stylus used less than 10 hours, \$60. Molyneux, W4WVM, 2101 Oakmont Ave., Anneton, Ala.

SALE or Swap: Elmac PMR6A receiver, PSRG power supply, \$85; Elmac A54 transmitter, \$75; PE103 118; Vaoro variable coil, \$10; want tabletoid allband rig or cash. F.O.B. W2FHD, Kenneth Block, 491 Woodfield Rd. West Hempstead, L. I., N. Y.

COLLINS 75A1 receiver with spkr, \$250; 32V1 xmitter, \$275. Both in like-new condx. W6JXW, Schneider, 11126 La Maida St., North Hollywood, Calif. 91605.

SELL: Brand new KWS-1, exciter & final, \$1500 cash. This is strictly a pick-up deal. Never hooked up. In original crate. Absolutely no phone calls. Write for appointment, details. W1UAR.

FOR Sale: The following Johnson equipment: Viking Ranger xmitter, Signal Sentry, low pass filter, S.W.K. bridge, plus Mosley 3-el. Vent Pocket beam for 20 meters; Turner 80 mike with C4 stand, all in excellent condition, used less than 6 months. All instruction books. Take the lot for \$300. Other misc. tubes, parts and equipment, send self-addressed envelope for list and price. D. W. Langston, W4WVH/9, T-365 Camp Green Bay, Great Lakes, Ill.

WANTED: Collins 75A4 receiver, in top condx. W2BXY, 218 Connecticut Rd., Union, N. J.

SELL: HQ-140-X, 10 weeks old, unused, \$245 or best offer. W8TIZ, 715 Quarry, Marietta, Ohio.

KW Linear amplifier, pair 304TL's, Class C c.w.; takes low drive of 25 watts output; utilizes 110V AC relay, antenna change-over, receiver mute, "B" plus on, electric bias, metering circuits, cabled, silver power supply, 2000V, enclosed in gray 36" Bud rack; A "Bute" for 10, 15, 20 M. Factory wired "Ranger" used as driver; 3 months old, 3 section crankup tower; new Alliance rotor; Telrex 10M beam. Rec'd best signal on band reports. Going away to college. Sell for \$675 or best offer. Pictures on request. John Markovich, K6HTG, 4490 Van Ness Blvd., Fresno, Calif.

FL8 audio filters, 2 for \$2.00 prepaid in C/S; SC8522 xmitter only with tubes, \$10; 110V DC to 110V AC, 60 cyc. 250 watt converter, \$10; K679B with heavy duty power supply and matching cabinet, excellent condx, \$125; K62211, exc. condx, \$6; K61031A Panadaptor gud condx w/instr mnl & extra C.R.T.

WANTED: gud mobile rcvr. and hi-fi gear. M. D. Haines, W5QCB, 1310 S.W. Military Drive, San Antonio 21, Texas.

COMPLETE Station: Globe King 500 (modified to 500A); HQ129X, Heathkit VFO, also Q multiplier; Millen R9'er. All PC's in exc. operating condx and in appearance. Will sell individual pcs. or complete station. \$185. Will consider trade. Will answer all inquiries. F.O.B. K8AKE, 1085 Grenoble, Florissant, Mo.

WANTED: Back numbers of CQ: 1946, 1950, 1952, 1953 and 1954. QST: 1919 to 1930 run inclusive, also 1952, 1953 and 1954. Quote prices. W. L. Runzel, Jr., W9OGA, 4727 Montrose Ave., Chicago 41, Ill.

TRADE General Radio UHF signal generator, type 804-A (9 to 330 Mc.) in gud condx for lab type generator in low freq. range. G. S. Nupp, K6HJG, 13440 Lakewood Blvd., Paramount, Calif.

SELL: Viking II with built-in VFO and touch-to-talk Turner mike. In gud condx. \$225. Will deliver within 15 miles. F. G. Masson, K4CJO, 1851 Winston Rd., Charlottesville, Va.

CASH for RA-63, BC-939, JB-70, BC-610-E, BC-614, BC-221, BC-312, BC-342 and late type test equipment, receivers, etc. Amber Industrial Company, 75 Varick St., N. Y. 13, N. Y. We pay freight charges. Write.

FOR Sale: Hallcrafters SS3A. Brand new condx, and in orig. carton. Price \$60. Charles W. Ehrlers, 319 Union St., Jersey City 4, N. J.

ILLUMINATED "S" Meters for Gonset Communicators. Just plug in to attach. Also new and used Gonset Communicators, converters, G-66's, G-77's, V.F.O.'s, etc. All types Elmac, Morrow, Babcock gear. Special: Six meter 12v. Communicator, \$140. Graham Co. (Bob, W1KTI) P. O. Box 23, Stoneham, Mass. Tel. ST 6-1966.

SELLING: all low frequency equipment. 20-A multiphase with QT-1 autotrip, used one month, \$150. B&W 850 1 Ka 80-10 tank coil, \$20; Presentation Vibroplex, \$15; Lambda MM-2 monitor 'scope, \$10; BC-221-1 freq. meter with reg. power supply and original calibration, \$50; Natheut MB-40 allband tank, \$9; exactly 50v net price for: Johnson 52 ohm SWR bridge, B&W 52 low-pass filter, National AMT 6000 volt 100uF split stator condenser, R-175 choke and many others. Prefer pick-up but will ship F.O.B. H. H. Richardson, W1AXW, 17 Whitsett St., Dover, N.H. 03820.

COLOR new, RCA 21-in. full warranty. Swap for 75A4, 32V3, or W6UTV, 1176 Lincoln, San Jose, Calif.

SWAP: 300 w. mod. & speech amp. parts for new Elmac 4-400A or pr. of 4-250A's. K6OKY, 248 Monte Vista, Costa Mesa, Calif.

FOR Sale: Best cash offer F.O.B. Jacksonville, Fla.: Globe King 400C like new, with twenty-meter coils and tubes. Meissner EX new wired Johnson VFO, CX49A, new 10HVDL, 20HVDL, HDV base, Powerstats, type 20, 1126. New 3-in. square meters 150, 250, 300, 500 MA, 3000V DC. New Weston 507-0.5 ARF. Panadaptor PRI, used only 1 month. Any item or all must go pronto. W4LEF, Box 504, Pickens, S. C.

SELL: BC148N with power supply in excellent condx., \$50. KN4-MUP, Box 504, Pickens, S. C.

KW-1. Best cash offer. Perfect condx. Final modified by Collins for use with SSB exciter on 75, 40, 20 with just two switches. AM unconverted. W4PR, Rt. 3, Box 170, Fredericksburg, Va.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallcrafters S18 \$29.00; S40A \$69.00; SX99 \$119.00; SX71 \$149.00; SX96 \$189.00; SX100 \$229.00; Viking Adventurer \$39.00; Viking II \$199.00; S408; S85; SX86; SW54; NC98; NC181D; HROS; NC300; HQ129X; HQ140X; HQ140XA; GPR90; A54; AF67; PMR6; PMR7; HT9; Collins 75A-2; 75A3; 75A4; 32V3; many other items. Easy terms. Write for list. Henry Radio, Butler, Missouri.

FOR Sale: Hammarlund BC-779 SuperPro rcvr w/pwr supply. Recently aligned by Collins, Radio, Seattle. Best offer over \$600 takes it, crated. F.O.B. Los Angeles, Calif. David Porter, W7WEE/6, 515 So. Kingsley Dr., L. A.

HT30, HT31, SX100, excellent condition, pair BC611 hand-talkies, best offer. W8EPI, Jerry Swartzlander, 1220 Stillwell Ave., Fremont, Ohio. Tel. FE 2-6132.

WANTED: Mobile or home station equipment. Will buy for cash or accept on terms for any equipment. Sell for cash only. BC21A, \$75; BC221T, \$75; RA6A, \$14.95; RA6C2, \$39.95; Ladd Electronics, 111 North 41, Omaha, Nebraska.

CANADIANS! Viking Ranger, \$200; Johnson Matchbox, \$55; Johnson low-pass filter, \$15; B&W T-R switch, \$20; Hallcrafters SC-480, \$30; Kenneth Dixon G-5 Armour Rd., Peterboro, Ont., Can. SELL: SX-28 with a speaker, in fine condx. \$110. N. Vilensky 4730 17th N.E., Seattle 5, Wash.

XFRMR, input 115V, 60 cps, output, 1120V C.T., 200 ma; 6.3V/3 & 0.1 amp; 3V/6 & 1 amp., \$7.50. S. C. Brody, 511-10 73rd Ave., Flushing 64, L.I., N. Y.

WANTED: Complete or partial set of Everyday Mechanics and Everyday Engineering magazines published 1915 to 1920; also Signa Corp. World War I complete propeller driven aircraft spark transmitter consisting of alternator, HV transformer condenser gap, etc. T. L. Mayes, 2208 Dean St., Schenectady, N. Y.

SELLING: Outfit Harvey-Wells TBSS0D with power supply and Heathkit VFO, in excellent condx. \$85; Hallcrafters SC480, exc. condx, \$85; Viking Matchbox, like new condx, \$30; B&W Matchbox, like new condx, \$25; D-104 microphone, like new, \$8; Vibroplex Champion bug, like new, \$8. W1QZT, 99 Hellstrom Rd., East Haven 12, Conn.

SELL: Surplus parts - all pft condx. 304TL, \$5; Two 832's, \$5 each; 300 ml, 8 hy. choke, \$4; two 115V, 60 cyc. alyns, \$6; 28uF, 1500V condx, \$3 each; Dynamotor 6/12 V, 340/680-210 ml, \$10; 17C 546 trans, \$12; RCA 4-65A used 100 hrs., \$10; Four 808's, \$1 each; Kenyon T3 trans. mult. line to grid, \$3; TB-35, \$3; Merit P1158 trans., \$8. F.O.B. Harrisburg, Penna. D. A. Klingler, W3KBR, 801 S. 60th St.

SELL: Complete station, Viking II and VFO, \$255; HQ129X and spkr, \$135; pair mounted balun coils, \$7; Eldico low pass filter, \$5; D-104 mike, \$10. Spare parts, etc. All for \$400. Will deliver in N. Y. C. area only. Roger Kapp, W2EEL, 111-09 76 Rd., Forest Hills, L.I., N. Y.

GONSET Communicator, 2-meter like-new in original carton, price including 2 meter Skywyper, 5 over 5 beam, \$169.50. KIAHO, 101 Woodchester Dr., Weston, Mass.

SUBSCRIBE NOW! Went's leading amateur publication, \$1.00 year. Free sample copy for 64 in stamps. Western Coast Ham Ads, 10817 Haverly St., El Monte, Calif., Don Williamson, W6JRE.

SELL: Subject to prior sale, complete station for best offer over \$500. All used very little, in excellent condition. Would consider sale of items and would ship insured collect. No trades; \$5-100 rcvr. with matching spkr, 20A exciter w/QT1 factory wired and tested, practically new; BC458 VFO, practically new; modified 1625 grounded grid 400 watt peak linear amplifier. Glenn E. Shipp, W6VYJ, R.R. 2, St. Joseph, Mo.

HALLCRAFTERS SX-100, used only a few hours, in perf. condx, w/National spkr, \$225; Elco Model 232 VTVM, \$25; EMC Model 205 tube tester, \$20; Heath Oil 'scope, \$25; Heath SG7 signal generator, \$15; Hallcrafters R42 bass reflex spkr, \$20. All above like new. Philip Schwelber, Jr., W2ZHE, Alcon, N. Y.

SELL: One 3-element Telrex 15-meter beam, new condx, used three months, \$60; one 3-element Telrex 20 meter beam, gud shape, but elements cut off about 1/4 way, and must be spliced; \$35. N. K. Thomson, 99 W. Millbrook, Millbrook, Me.

WANT SSB linear amplifier such as Lakeshore P4000-G. Also interested in a good SSB receiver. W6ZJH, 2444 D, Lincoln, Neb.

20A, new condx, and Central Electronics 458 conversion VFO, \$175. A. L. Turner, 117 W. Wright St., Pleasantville, N. J.

FOR Sale: Prop pitch motor converted, xfrmr, and spare motor, \$30; 2000V 100mA constant voltage power supply, \$10; 600V 10A Leeco-Neville alternator, \$40; 12 volt Leeco-Neville alternator, \$60; dual AC blower, \$7. Want: Collins 35C2 filter, J. Szabat, 16 Pearl Ave., Old City, Penna.

SELL: Viking II, has latest factory modifications, \$199; Collins 75A-2 converted to A-3, calibrator and product detector. Make offer. Central Electronics 10A with 80, 40 coils, \$99; BC-458 used with 10A, \$10; Mon-Key, \$19.95; Five 80-amp. Biley Novice xtals, \$9; TU-15A six meter rig, \$10; Heathkit GDO with low freq. coils, \$12; Charles Vangard, W9QCH, RFD 1, Box 13, Luck, Wis.

WANTED: Coils or forms for National SW-3, TV antenna rotor; 2 and 15 meter beams; 2 meter rig, preferably transceiver; also transmitters covering Novice bands. Please write: John Whitehouse, 312 First St., Scotts, N. Y.

FOR Sale: HRO 15 meter coil set, as per QST July 1956; aligned in my HRO-5, excellent performance. Make an offer. K2CWF, 69 Ashland Rd., Summit, N. J.

WANTED: Chicago Mod. 178-1 wire recorder in excellent condition with 2000 cps wire; also Astut D-104 mike with G antenna used less than 10 hours. Make offer. Earl Cowden, 132 N. Columbus Galion, Ohio.

SELL: Globe-Scope 65A, \$60; Bug, \$10. Knight VFO, \$20. John Moran, K9BCX, 5443 Marilyn Rd., Indianapolis, Ind.

SELL: Harvey-Wells TBSS0D with APSS0 power supply and manual, in gud condx. \$100. W7YOA, Box 95, Whitetail, Mont.

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CENTRAL "A" Slicer, "special" \$39.95, "B" Slicer \$74.95, Collins 32V2 \$450.00, 32V3 \$550.00, Eldico TR 75TV \$49.95, VFO-2 \$19.95, VFO 10 20A \$18.95, Elmac AF67 \$19.95, A54 \$99.95, A54H \$109.95, Gonset 3008 \$109.95, Gonset 324.95, 3-10 \$29.95, Hallcrafters-SX24 \$69.95, SX43 \$99.95, Hammarlund SP400X \$229.95, Johnson VFO \$19.95, Lettine 240 \$59.95, Lynco 600 \$79.95, Hammarlund 420 \$44.95, 411 \$29.95, Millen 90810 VHF \$89.50, Morrow MBR5 \$194.95, National HRO-9 set coils-SOKC to 30MC-Rack mount \$139.95, HRO50T1-6 coils & spk \$325.00, PE-103 \$19.95, 348N \$59.95, RME 45 with apk \$99.95, Collins 310-B-1 \$195.00, EVO 200, Box 312, Concord, N. H.

NEW Western Electric 8 volt filament equivalents of 4-400A, \$6 each, \$11 pair, plus postage. S. Tucker, W2HLT, 51-10 Little Neck Pkwy, Little Neck 62, N. Y.

SSB transformers, newly manufactured for 10A, 10B, 20A and W2EEL excitors - \$2.45 per set of three, postpaid USA. Electronics Associated, P. O. Box 206, Montclair, N. J.

4 x 5 CROWN Graphic camera outfit, new condx, latest model, 162 mm f 4.5 opt lens, holders, flashgun trays, etc. cost \$500. Will trade for an excellent used highgrade receiver such as NC-183D, HRO-60, NC-300, etc. Robert Parrish, Box 2251, Corpus Christi, Texas.

PHASEMASTER II SSB exciter and BC458 VFO for sale. Need cash. Any reasonable offer considered. May accept small receiver as part. K6EYB, 760 Via Marin, San Lorenzo, Calif.

WANTED: transmitting micas .01 uF 5000V or more. Also 304TH and 304TL tubes, for experimental purposes. Ed Kucharaki, 39 Aqueduct St., Quakertown, N. Y.

WIRED Q Multiplier for Communicator. Details write: Communi Q Products, Box 114, Baldwin, N. Y.

FOR Sale: Heathkit AT-1, AC-1, VF-1 and cathode modulator; four Novice band crystals. All for \$35. Stanley Krawiec, K2RKH, 300 Jefferson St., Fort Amity, N. J.

2 AND 6 Meter KW amplifier using new ceramic 4X250B's. Operators Class C and linear. Dual band coaxial grid, interchangeable plate tanks. Model KW-62 amplifier plus tubes, less plate tanks, \$176.50. 6 and 2 meter plate tanks, \$53 each. Literature available. Amplex Radio Products, 1195 Westlake Dr., Walled Lake, Mich.

NOVICE Call List published bi-monthly. Send \$1.50 for yearly subscription. Post card for free listing. Phil Bartling, W1FO, 212 Washington, Towson, Md.

FOR Sale: In new or like-new condx: Heath AT-1, QF-1, Viking VFO, NC-98, SW-94, 6 volt dynamotor, Gonset Tri-band conv., Gonset Super 8 conv., DB-23 preselector, Johnson Matchbox (250 watt); Knight Little Giant 8 watt amplifier, Eico 5" scope, BC-645A, Heath V-4 VTYM, Globe Scout Mod. 85, complete set of Supreme Radio Diagram year books, Vol. 1 thru Vol. 19; 1500 volt at 300 Ma. rack-mounted power supply; Bud LF-601 lo-pass filter. Any reasonable offer will be accepted. Details for a stamp. All F.o.b. Jacksonville, W4FXQ, 5208 Birkenhead Rd., Jacksonville 10, Fla.

TRANSFORMERS commercial grade multi-match modulation 300 watt \$26.94; 500 watt \$41.20 plate transformers, 2000/2500 volts DC 500 Ma. \$48.16. Catalog, also rewinding, Frampton Transformer, Box 109, Blackwell, Okla.

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BUG Code Key, \$10; Ten Station Intercom Master, \$15; Heath electronic switch, \$15; Simpson 3.0 mutual conductance tube tester, oak case, latest chart, \$50; plate xfrmr, 900-750-0-750-900V, \$10; two heavy-duty Thordarson chokes, \$3, all in excellent condition, priced F.o.b. V. R. Hein, 418 Gregory, Rockford, Ill.

MUST Sell: New HT-32, \$550; SX-101, \$325. No trades! You pay shipping. Don Goodrum, K4DBH, 2819 Plantation Dr., East Point, Ga.

FOR Sale: KW-1, 75A4 in operation. C. H. Buchanan, 1210 White Oak Dr., Springfield, Ohio, FA 4-1219.

FOR Sale: NC-300 with xtal calibrator and spkr, \$300; DX-00-\$175; Heath grid dip meter, \$12; Telrex 56 model 10 meter beam with AK-22 rotor, \$60. Joe Scialfa, W2TZH, 707 Broadway, Long Branch, N. J.

SELL: BC-779B Super-pro. Excellent, \$90. K2ECY, Bethpage, L. I., N. Y.

COLLINS 75A-4, late serial number with all modifications, 3 Kc. filter, used only one month. In original packing. Will ship. \$475. Leonard, W4FFS, 2044 Avenel Ave., S.W., Rosauke, Va.

SELL: Hallcrafters 3.8C. Like new condx. Make me an offer. Joel Levy, KN2VNS, 1075 W. Ninth St., Brooklyn, N. Y.

NIKON SI F2, case and unused flash attachment. Will swap for gud revr or commercial xmitter. W2HAE, 85 Franklin, Northport, L. I., N. Y. Tel. Northport 3-0501 J.

EXCELLENT NC-125 receiver, complete with speaker, \$135. L. B. Converse, 112 Keith Dr., Clarksville, Tenn.

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WANTED: Gonset FM tuner, 152-162 megacycle, with squelch. Also could use 40-50 megacycle with squelch. Quote best price. Cash, Harvey Gordon, 1120 Cooper St., Lansing, Mich. Tel. IVanhoe 5-3360.

SELL 32V2, \$325; Pacemaker \$400; 75A2, \$300. Converted mobile Link xmitter, \$35 complete. W2ADJ.

SELL: Globe King 400 xmitter, like new condx; Heathkit VFO, RME-45 revr, new tubes realigned; Carter converter 6VDC to 110VAC. Bestoffers, Glenn Toppenberg, New Eng. San., Stoneham, Mass.

COLLINS 32V3 xmitter with B&W low pass filter, \$495; Hallcrafters HT17 xmitter, \$18; Shure Dispatcher reluctance mike, \$18.50; Turner xtal mike, \$12; Collins plug-in 100 Kc xtal calibrator, \$13.50. Alfred Bein, K2BWQ, 26 Lenox Ave., Clifton, N. J.

TRADE: APT-5 xmitter 300 to 1600 Mc., 100 watts unmodified for BC348. W9WMR, 113 So. Elmwood Dr., Aurora, Ill.

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FOR Sale: following new items: 1.87 Kw and 9.3 Ka 120V 60 cycle 1800 rpm generator with exciter; 6 tube farm radio less battery, six 5VCT-30A, 20 Kc insulation fil. xfrmr; also: prop pitch motor 50 ft. 8 PC 1 1/2" alum. masts, miscellaneous smtg. tubes and meters, BC-458, 6V dual Vibrapack, 500V DC. W2PUK, Glen Ridge, N. J.

FOR Sale: Speed Graphic camera 2 1/2 x 3 1/2, 3.5 lens, filmpack adapted cut film holders, flashbun, filters, carrying case. Will trade for DX 100 or some comparable commercially built xmitter. W8JAV.

MAKE Best offer for 6M 12v. Gonset II Communicator, used ninety days with two Saturn halos, complete with two coax halos for fixed and mobile, two mks, four xtals. List price \$295. G. M. Golden, W1OZ, 920 Cambridge St., Cambridge, Mass.

FOR Sale: Collins 310B xmitter, bandwidthing 80 to 10 meters; in excellent condition. Completely TVI suppressed, \$190; 32V3 Collins, in excellent condx, \$475; new B&W variable angle slide mount, \$250; Ameritron 2 KW xfrmr, 3000V ct, \$40; two B&W KW butterfly condensers 40-60 μ fd \$10 each; Vaaro 250 Va. 0 to 136 volts, \$8; National MB3OL, \$8; National MB 150, new, \$15; Gonset G66 revr, like new condx, w/psr supp., \$175. J. E. Shurt, W4JBN, Sargis, Ky.

WANTED: Any good used receiver for far less than \$100. Ric Lightfoot, 89 Carruthers, Kingston, Ont., Can.

FOR Sale: Heathkit BE-4 Battery Eliminator, 0-6 1/2 15 amps, or 0-12 1/2 7.5 amps (DC volts). Assembled and tested. Never was used! Guaranteed brand new and working properly. \$31.50. W5LCB, 3112 N.W. 13th St., Oklahoma City, Okla.

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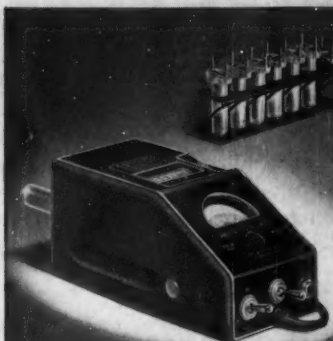
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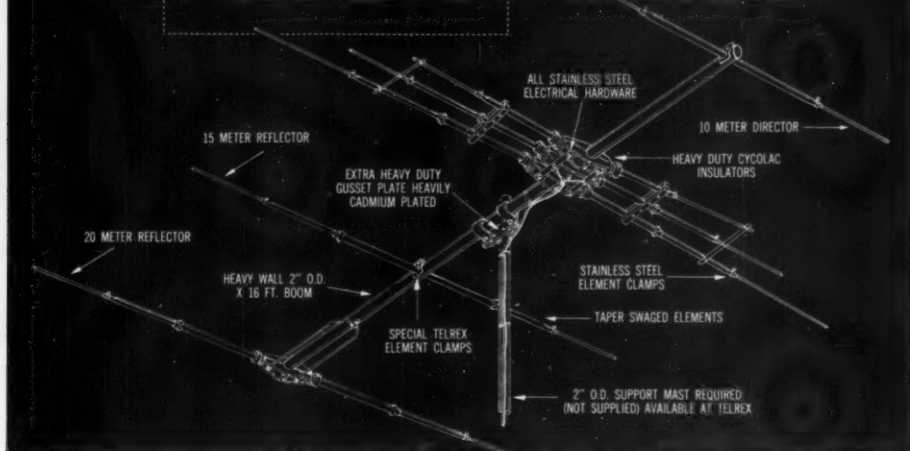
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"Business end" of the
Globe Scout 680—showing
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New Globe Scout 680 —uses an RCA-6146

The WRL Electronics' Globe Scout 680 pictured here is just one more instance where RCA power tubes are being specified by professional transmitter designers.

Built for CW and 'phone operation on all bands, 6 through 80 meters, it is logical that this transmitter should use an RCA-6146 beam power tube in the final. And here's why.

First, an RCA-6146 needs very little driving power. Second, this outstanding beam power type delivers full output with relatively low plate voltage. Third, the tube is a natural for compact equipments and bandswitching circuits.

For more watts per "transmitter dollar", it pays to design around RCA high-perveance power tubes. They're available from your RCA Tube Distributor—to provide powers up to 1 KW. For technical data on the RCA-6146, write RCA Commercial Engineering, Sec. F37M, Harrison, N. J.



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WRL Electronics' bandswitching Globe Scout.
Model 680 operates all bands, 6 to 80 meters.
Model 66 operates all bands, 10 to 160 meters.